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*GOODS FOR EXPORT*

*The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as an indication that they are necessarily available for export*

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*ANSWERS TO ENQUIRIES*

*By reason of staff shortage due to enlistment, we regret that it is no longer possible for us to answer enquiries involving research, or to supply dates when articles appeared in back numbers, either by telephone or by letter*

## The Todt Organisation

MR. EDEN announced in Parliament on October 22 that the United States Government has responded to an approach by the British Government to consider the formation of a road and rail making organisation on a large scale, to be derived from the U.S.A. civil engineering resources in men and material. The announcement was made in reply to a question which suggested that such an organisation would enable the Allies to have at their disposal a body superior to the Todt organisation. It may be recalled that the German organisation set up and directed by Dr. Todt is responsible for supply and transport for the German fighting forces, and is apparently extremely efficient, if we are to judge by the phenomenal speed of German aggressive drives. It is, therefore, worth noting the basic principle upon which this remarkable organisation has been developed. Dr. Todt, formerly an employee of the German State Railway, was later appointed by Hitler to be responsible for the construction of the German State motor roads. Observation—at first hand up till the outbreak of war—of the results he has achieved lead to the conclusion that Dr. Todt acts upon the principle of delegating authority and fixing responsibility in the full and most ruthless sense of the terms. When he has delegated authority he has demanded certain results within a specified time, and made it clear that he would not interest himself in methods except in so far as he might be called upon to give advice and remove difficulties. He would, however, insist upon the results, and, if they were not achieved, would remove those whom he had made responsible and replace them by others who could accomplish what was wanted. Naturally, such a system of organisation immediately raises the question of finance, and it is here probably that the Germans have broken away from tradition most drastically, in treating finance, at any rate so far as the war effort was concerned, as solely a means to facilitate the end desired. Therefore, those made responsible for results are not in any way shackled by Treasury control, regardless of the ultimate outcome.

## Export Trade and Restrictions

Lord Dudley Gordon, President of the Federation of British Industries, at a meeting of the Grand Council of the Federation recently spoke of the difficulties which were inherent in any drastic severance of export connections. This is a matter which has been emphasised more than once in our columns, and there will be wide agreement with Lord Dudley Gordon's warning that export trade cannot be turned on or off like a tap. Industrialists in this country have been made only too well aware by harsh experience that trade once lost is extremely difficult to regain; at the same time they realise that further restrictions on export trade may be necessary. It cannot be gainsaid that our traders should be told frankly precisely what goods may be exported, to what extent, and to what markets, and what goods for the moment must be regarded as incapable of export except to certain limited destinations. The trade organisations of this country could well be used as a vehicle for conveying this information confidentially, if it were considered that to broadcast it might be inimical to the national interest. On the question of reconstruction, Lord Dudley Gordon admitted that it was too early to reach definite conclusions which must depend on the duration of the war, and the position of various States at the end of it. He said, however, that at a later stage he would propose to the federation that a representative committee should be set up to deal with post-war reconstruction.

## Mythical Railway Dangers

We have ceased to experience surprise however astonishing may be some of the statements made by the lay press when discussing railway matters. A recent example was the widespread announcement that large numbers of Spanish railway wagons were about to be transported by the Germans for use on the railways in those parts of Russia which they had occupied. It was not mentioned, of course, that the difference between the Russian and Spanish railway gauges was greater than that between the Russian and the German gauges. In its comment on the recent Lords debate on the

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railways, *The Spectator* made the sweeping statement that the making-up of lost time advocated by Lord Monkswell was not desirable, because in France that practice had been "notoriously productive of accidents." Having closely observed railway practice on the Continent for many years, we cannot recall any accident which has been caused by the making-up of lost time. Obviously, the adoption of such a principle in railway operating can never be lightly undertaken, and where it is widely adopted, as in France, there must be preliminary and adequate precautions. The equipment of every locomotive with a speed indicator and automatic recorder, and the requirement that the drivers shall acknowledge any distant signals which are against them and record that acknowledgment, are ample safeguards against the exceeding of speed restrictions. Our experience of Continental railways has been that speed limits are more meticulously observed than in this country, where the practice of making-up lost time has hitherto not been enforced.

## Overseas Railway Traffics

The rate of increase in the traffic receipts of the principal British-owned railways in Argentina for the 15th and 16th weeks of the current financial year shows signs of slackening in comparison with the figures for the previous fortnight. The advance recorded by the Central Argentine in the 15th and 16th weeks is still substantial and amounts to 1,339,650 pesos compared with 1,156,450 pesos, but the increase on the Buenos Ayres Great Southern has dropped from 1,294,000 pesos to 590,000 pesos, and the total gains registered by six of the companies have fallen from 3,207,750 pesos to 2,747,150. A smaller crop movement to the ports is understood to be the reason for the change. The Central Uruguay in the 16 weeks of the working year has an increase of £57,338.

| | No. of week | Weekly traffics | Inc. or decrease | Aggregate traffic | Inc. or decrease |
|---|---|---|---|---|---|
| Buenos Ayres & Pacific* ... | 16th | 1,250 | +135 | 20,370 | +2,446 |
| Buenos Ayres Great Southern* | 16th | 2,015 | +148 | 33,272 | +3,578 |
| Buenos Ayres Western* ... | 16th | 912 | +236 | 12,922 | +2,929 |
| Central Argentine* ... ... | 16th | 2,130 | +790 | 29,266 | +6,904 |
| | | £ | £ | £ | £ |
| Canadian Pacific ... ... | 41st | 970,200 | +310 000 | 33,491,600 | +7,723,000 |
| Bombay, Baroda & Central India | 27th | 288,975 | + 32,325 | 5,487,225 | +374,325 |

* Traffic returns in thousands of pesos

United of Havana Railways' receipts for the first sixteen weeks of the current financial year show an improvement of £57,338.

## Roads and Road Transport in Brazil

Road construction is proceeding rapidly in Brazil. In the ten years 1930-1940 the length of motor roads in the Republic was doubled, increasing from 70,000 miles to over 140,000 miles. The States of San Paulo and Minas Geraes, with some 30,000 miles each, account for 40 per cent. of the total. The Via Anchieta, now being built between San Paulo and Santos, is a good example of the modern road building in Brazil. It will shorten the journey between the two cities to about 38 miles. This modern motor road will have two double-width tracks, separated by a grass verge. The Rio—Petropolis road also is being modernised, and its width increased to 60 metres (197 ft.). The increasing extension and improvement of motor roads has been accompanied naturally by an increase in the number of motor vehicles in service. The totals of motors of all classes registered in Brazil in the last three years are as follow:—

| Year | Motorcars | Lorries | Buses | Motorcycles | Total |
|---|---|---|---|---|---|
| 1938 | 106,764 | 54,903 | 8,529 | — | 170,196 |
| 1939 | 122,061 | 74,785 | 5,965 | 3,407 | 206,219 |
| 1940 | 129,377 | 84,265 | 7,024 | 4,365 | 225,031 |

## Concrete Sleepers

The use of concrete sleepers is extending, and has just become the subject of a British Standard Specification (B.S. 936), noticed on page 426 of last week's issue. The specification relates to standard-gauge track over which the speed is limited to 20 m.p.h., and it provides for both transverse and block sleepers. The bearing area on the ballast must not be less than 300 sq. in., and the projection of the block, or the borne part of the transverse sleeper (the length of which is to be 7 ft. 6 in.), must be not more than 16 in. on each side of the rail. Consolidation of the concrete is to be by vibration; and bolt holes, wood plugs, or plastic inserts for holding the rails or chairs are specified. It is recommended, in an appendix on the use of concrete sleepers, that a through bolt or other type of fastening to ensure close contact between the rail or chair seat and the sleeper should be used. Precast units for switches and crossings are not considered practicable, but when timber is unobtainable, *in situ* work is thought to provide a satisfactory solution, conditional upon the ground being thoroughly consolidated and a sufficient reinforcement included in the foundation to meet the possibility of uneven settlement. There is no mention of how gauge should be maintained in the event of block sleepers only being used, and presumably ties between the rails would provide this security, although a combination of transverse and block sleepers is referred to. The importance of having an adequate bed of ballast upon which to support the sleepers might have been emphasised, for even with a bearing of 300 sq. in. and a speed restriction of 20 m.p.h., irregular settlement is very liable to occur under block slepers unless the foundation has been properly prepared.

## Producer-Gas Filtering

In endeavours to overcome the trouble of filtering, most important of those now affecting producer-gas road transport operation, electrostatic filters are coming to the fore. Some time ago the Gas Light & Coke Company patented (No. 536,429) an electrostatic apparatus which could be used in conjunction with mobile plants, whereas previous applications have been to large town gas works. A high-voltage current is passed through a fine wire located down the centre of a tube, and this current charges the solid particles in the gas and causes them to be attracted to an uncharged distribution plate, from which they can be cleared as opportunity offers. The final element in the filter is loosely packed sisal, which does not offer any great resistance to the gas flow. Another electrostatic type (patent No. 537,448) has been evolved at the works of Vauxhall Motors Limited, and this includes a step-up transformer operated by the vehicle battery. The primary circuit contains a vibratory interrupter, and in the secondary circuit there is a thermionic valve for rectification. One of the claims made for this device is that it has special value in the removal of tarry substances from the gas, after larger particles of foreign matter have been filtered out by other means. Thus the electrostatic filter comes second in the sequence in the Vauxhall arrangement, as it does in the G.L.C. layout, but in each case a subsidiary filter is fitted after the electrostatic device

## Indian Catch Siding Interlocking

The long steep grades that occur in parts of India and in Burma early necessitated the adoption of special precautions against breakaways and trains getting out of control, and the catch siding, leading into a length of up grade, with or without sand-track, was introduced in many places. On page 438 we publish some particulars of a simple form of special interlocking employed on the Madras & Southern Mahratta Railway for the control of facing catch siding points on single lines, by which the spring action of the points is retained for protection against a breakaway from ascending trains, but token interlocking is used to ensure that they are kept standing for the turnout until a descending train has stopped, forming a simple form of approach locking. Electric indication of the exact condition of the points is provided in the stationmaster's office, three miles away, with audible warning, which also serves to notify him when an ascending train is approaching, so that he may take steps to admit it without stopping it on the incline.

## Motorbus Dimensions

On the assumption, of which he admitted that sometimes it was difficult to see the justification, that Government regulations are introduced for the benefit of the public, Mr. G. W. Hayter, General Manager & Chief Engineer of the Northern General Transport Co. Ltd., has discussed "the economics of omnibus dimensions" in a contribution to the Institute of Transport. His main criticism of the rules and regulations concerning motorbus dimensions which have been

laid down by the Ministry of Transport under the Road Traffic Act, 1930, are that they are too permanent, and that the Ministry is too reluctant to modify them. Mr. Hayter emphasised that regulations are necessary, and that they were formulated on the basis of the best knowledge available at the time they were made, but in view of the difficulty of securing changes he pointed out that had the rules been introduced in 1920 instead of 1930 such features as pneumatic tyres might have been barred for an indefinite period. One of Mr. Hayter's points was that the present maximum permissible width of 7 ft. 6 in. is not adequate to give comfortable accommodation for four persons alongside one another with a gangway of 12 in., and he hoped for an extension to 8 ft. on suitable routes. In this connection it is interesting to note that 13 buses which have an overall width of 8 ft. are now being operated on regular services in this country under a special regulation made to regularise their operation during wartime. The vehicles were built for export to South Africa but have been diverted to home use; 7 are being worked by the Potteries Motor Traction Co. Ltd., 4 by Birmingham Corporation, and 2 by the West Monmouthshire Omnibus Board. If no difficulty is experienced with these buses, wartime experience will have demonstrated the practicability of a modification such as Mr. Hayter advocates.

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### Changing the Rule of the Road in Hungary

According to press reports from Hungary, the Germans are insisting on the street traffic regulations being altered and the practice of driving on the left, once the rule in the Austro-Hungarian Monarchy, being abandoned. In any case, it is likely that the change would soon have been made, because Austria had found it very troublesome to differ in this important matter from her neighbours, and had already made the alteration, although not all over the country at the same time. Sweden still has the left hand rule, but it has already been agreed to make the change at no distant date. The inconvenience, not to speak of the danger, of changing over at land frontiers needs no emphasis, and it is surprising that a reversal of practice was not made long ago in such countries. The difficulties are not generally so great on the Continental tramways as they would be in this country, for most types of Continental tramcar can be boarded from either side equally well, but top deck vehicles with staircases and entrances of the kind used in Great Britain cannot be simply transferred to the opposite track or side of the road. Crossover roads on tramways, of course, need altering and have to become facing points until they are relaid. All the road signs need shifting, although it would probably not hurt to leave some of them at any rate for a time in their old places. Even before the last war there were many who advocated dealing with the problem, and it would have been easier to introduce the right-hand rule everywhere then, before there was so much motor traffic.

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### Romance on Rails

To travellers of old the word " hostess " denoted one who presided over warming pans and bowls of punch in wayside inns. At the present time, so we learn from our American contemporary, the *Railway Age*, the duties of travellers' hostesses include the treatment of train sickness and of infantile stomach disorders. A change no less remarkable but more attractive has come to pass in their appearance for in place of the bustling dames of tavern and hostelry we are shown portraits of seven young ladies who, before they were recruited to the streamlined expresses of the Southern Railroad of the U.S.A., adorned various professions including the stage. To us, for whom travel has become a grim business, the idea of occupying a reserved seat in a streamlined train seems so attractive that we should be prepared to enjoy it without insisting upon that " plus a little something the others haven't got " presumably represented by the train hostesses. However, where travel luxury is easier to come by, the little somethings probably have a commercial justification, even at the cost of inducing train-sickness among the susceptible and babies' colic among the elderly in years but young in heart.

## The Railway Agreement Debate

WHEN the House of Commons on October 22 debated the revised agreement between the Government and the railways, expectations that the full agreement would be before the House were not realised. Colonel J. J. Llewellin, Joint Parliamentary Secretary to the Ministry of War Transport, apologised for the omission but said that he did not think it would help the House much when it saw the agreement as it was a rather dull and uninteresting legal document. It may well be that to the generality of Members of Parliament the full terms of the financial agreement might not be readily comprehensible, but it is regrettable that so important a document was not before the House when it had an opportunity to discuss the agreement. There can be no doubt that the settlement of the actual terms which are embodied in the document was a matter which entailed considerable discussion, and it is not too much to hope that in a matter of this kind, at least some Members of Parliament would have seen fit to have acquainted themselves with the purport and implications of those details. The Government, indeed, had promised to lay the railway agreement before Parliament, and it would surely have been more convenient for Members to debate matters arising from the financial arrangements with full knowledge of the agreement which elaborates them, rather than that they should have to rely upon a White Paper which does not purport to be more than an outline of the agreement. It may be, of course, that a further opportunity will be given the House both of seeing the full terms and if necessary of discussing them.

The debate took its expected course, and did not add greatly to knowledge of the arrangements with the railway companies. Colonel Llewellin made it clear that the railways could no longer charge the cost of restoring war damage to the pool, but in future, in common with other public utility undertakings, will have to find 50 per cent. of the cost of making good that damage from their own resources. On the matter of variations in railway rates and charges he declared that the Government would adhere to its stabilisation policy unless it was forced off it by such an increase in, for instance, wages as would make its abandonment inevitable. The fact that the Parliamentary Secretary qualified his statement by the inclusion of the words " for instance " suggests that there are other factors besides wages which may influence the Government in its railway charges decisions. Later on, in fact, he said that the Government would, of course, alter fares here and there, and adjust them, as indeed he wished them to be adjusted, without going to any kind of consultative tribunal. If it was thought desirable that rates generally should go up, the Ministry might decide it for itself, or it might take the matter before the Railway Rates Tribunal. He was unable to say whether charges were to be made for the conveyance of Government goods and personnel, as that was still under discussion between the departments concerned. It is satisfactory, at least, to know that he thinks that it will be necessary to keep a record of costs of this kind, and also of variations in costs of labour and material for each year of control.

Colonel Llewellin answered suggestions that the £43,000,000 rental which the railways will receive was generous, by saying that during 1940 the net pool revenue for the four main-line railways and the London Passenger Transport Board came to £42,300,000, after unspecified provision had been made in respect of war damage, and that this year it would probably come to considerably more. He did not say that but for the lag in adjusting charges to cost—a basic provision of the original agreement—the figure would have been considerably more for 1940. It would appear, indeed, as was suggested in THE RAILWAY GAZETTE last week, that the present agreement is better from the viewpoint of the Exchequer than it is from that of the railway stockholder. In any event there can be no ground for the suggestion that anything in the nature of a subsidy is being paid to the railways. Colonel Llewellin, in fact, admitted frankly that the railways had set aside ordinary commercial considerations in order that the national interest might be paramount, and that that was why the Government had been able to get so good an agreement from its point of view. It was useful, too, to have it on record from the Parliamentary Secretary that

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the railway boards did not accept the £43,000,000 as in any way representing the existing or potential earning capacity of the undertakings, and there can be no doubt that from the taxpayers' point of view the Government is justified in congratulating itself on having made a good bargain. As some £80,000,000 of railway capital will not find it possible under the agreement to earn a return, taxpayers who are also holders of L.N.E.R. preferred and deferred stock may not be so enthusiastic as others. It was not to be expected, of course, that any indication would be given in the House of Commons as to the extent of war damage to date, but it is clear that except in the event of damage in any year exceeding £20,000,000, the railways will have to find a larger sum under the new agreement than they would have had to under the old.

In reply to Members who urged nationalisation of railways, the Parliamentary Secretary made it clear that the Government already had all the control that it desired; and it was good to know, too, that he was convinced that it was not possible to remove the General Managers and people who had experience in a great industry of this kind and put in Civil Servants or similar persons to run the railways. In expressing his appreciation for the work of the Railway Executive Committee he pointed out that the only way in which the agreement could be related to the control of the railways was that when discussion arises as to the withdrawal of more remunerative railway services in order to get essential troop or goods traffic through, it is no longer necessary to consider the effect on the revenues of the railways. That, he said, was the only way in which this changed agreement altered the provision from the operational side. It might be added, of course, that freedom of this kind, while it may no doubt help to meet wartime contingencies, is not without its dangers. If undue advantage were to be taken of lack of relation between services and revenues far reaching damage to the goodwill of the railways might be done. During the course of the debate several Members raised points of interest to which it was not possible to obtain specific answers. Mr. Moelwyn Hughes, for example, who left the House in no doubt that he was highly critical of the agreement, raised the matter of the division of function of the Railway Executive Committee, a point which has been dealt with more than once in THE RAILWAY GAZETTE. He was anxious also for information of the maintenance provisions of the agreement. Major Maxwell Fyfe, Mr. Silkin, and Sir Joseph Lamb wished to know how the payment to the railways under the agreement would affect their rating valuations. The Parliamentary Secretary's answer that this will not become a live issue until 1946 was scarcely satisfactory, but it was, perhaps, hardly to be expected that he would be able to deal with the point without notice. All in all it may be said that in present circumstances the agreement confers small benefit on the railways in exchange for considerable sacrifices, not the least of which is the fact that in effect the railways have agreed, during a period in which they are working to capacity, to have their Excess Profits Tax basis fixed at a level which leaves some £80,000,000 of their capital unremunerated. In doing so they have foregone the opportunity which is afforded to all other companies which claim to have been "depressed" in their standard E.P.T. period, of asking for assessment on a capital standard, which ensures some return on all ordinary capital.

## Mr. Stanier's Presidential Address

THE presidential address delivered by Mr. W. A. Stanier to the Institution of Mechanical Engineers and fully summarised in this issue, is of great interest to locomotive engineers and, indeed, students of locomotive practice everywhere. For one thing, it provides information on points about which there has been a good deal of speculation and no doubt some misconception among those to whom anything in the way of direct evidence has hitherto not been available. It gives, for instance, data relating to the performance of the L.M.S.R. turbo-locomotive which has now run 185,700 miles in express passenger service; these data, although of an interim character only, no final summing up being as yet possible, suffice to show how this engine compares on a performance basis with others of the reciprocating types employed for similar duties on the same railway. The figures representing miles run since last heavy repair, given in one of the tables, are worthy of note. A matter about which there has often been some controversy, concerns the attitude of that eminent locomotive engineer, G. J. Churchward, towards superheating in the early days of its application on British railways. As Mr. Stanier remarks, "Churchward realised that his own designs (for the G.W.R.) with their greatly improved cylinder efficiency produced results as good as, if not better than, the superheated engines on other lines, and he contented himself with applying only a low degree of superheat with steam temperatures in the region of 500° F." At that time opinions on the subject of superheating were, as might be expected, somewhat diverse, and reference is made in the address to a small class of 4-4-0 engines on the Lancashire & Yorkshire Railway to which in 1908, "almost by accident," low superheating combined with improved cylinder and valve design were applied; we believe it to be true that, although the owning company did not appreciate it, the improvement in the performance of the engines was as much due to the re-designing of the cylinders and valves as it was to superheating.

Another debatable point referred to is that of the influence, for good or otherwise, that railway grouping may have had upon locomotive practice. As to this, Mr. Stanier says that the general advance in the past twenty years has been greatly facilitated by this development in railway management, as it has brought into open competition locomotives which had never previously been compared on the same work, throwing into high relief those types which were inferior, and making it possible to justify their replacement by more economical units. This, within finer limits, was the purpose of the locomotive interchanges between certain railways, but the scope of these was not, of course, to be compared with the opportunities afforded as the outcome of grouping. Considerable space was devoted in the address to the important subject of thermal efficiency, a matter concerning which it would be possible to devote a complete paper without the risk of becoming redundant. Interesting comparisons were made between the approximate best thermal efficiencies of various steam locomotives, beginning with a representative saturated engine of 1880, followed by a superheated locomotive of 1912, one of the *Coronation* Pacifics of the L.M.S.R., and finally, a Chapelon superheated 4-8-0 compound. The table reproduced on page 441 affords a means of judging the relative values in each of these cases. We would commend the attention of our readers to Mr. Stanier's remarks on compounding, another of the oft-discussed matters associated with locomotive practice, and in particular to the diagram which provides an answer to the question, so often asked, as to why locomotive compounding is not more popular in this country, and its place in modern practice so conspicuously small. The address is of further value where it deals with locomotive testing and with operating efficiency, and particular interest attaches to the part which deals with future locomotive design. Mr. Stanier states that he has no desire to assume the role of a prophet, but even though he had in fact done so he would, as the conclusions he draws make abundantly clear, have been on safe ground with his experience and knowledge of the facts to support him.

Not the least important of the many aspects of the locomotive profession covered in the address is that of the final section which concerns the training of those who aspire in their youth to become mechanical engineers. Here, as on other subjects, Mr. Stanier is able to speak with authority, having closely studied it for many years. The advice he gives provides for widely different circumstances, and details of three forms in which the necessary training can be obtained are set forth for the advantage of those who are contemplating engineering as a career. He advocates at one point the desirability, where possible, of graduating at a university, and the spending of long vacations in an engineering works, stressing, however the value of a subsequent spell of three or four years pupilage in a works so that the practical, as apart from the more theoretical, training shall assist to equip the young engineer with the required acquaintance with shop organisation, whereas, if that be lacking he may feel handicapped in the early stages of his career. It is characteristic of the author to remark in closing

that anything he has been able to do in furthering the interests of the locomotive profession, has been due to the loyal co-operation and help of his staff; but, we might add, it takes an outstanding personality to evoke such loyalty.

## Buenos Ayres Great Southern Railway

THE adverse effect of war conditions on the export of grain from Argentina and the consequent decrease in the tonnage of cereals handled were the main causes of the reduction of £319,975 in the gross receipts for the year ended June 30, 1941. In spite of economies in every direction including a reduction in train mileage of 7 per cent., working expenses increased by £344,525 during the year. The net receipts of £2,093,806 accordingly showed a decrease of £664,500. Exchange differences amounting to £1,005,140, although £81,521 less than for the previous year, again proved a heavy burden on the company's finances. After debiting working expenses with £262,783 in respect of the net expenditure on renewals, fire insurance, and claims and casualties and providing for all fixed charges, there is a debit balance for the year of £596,445. Deducting the £61,103 credit balance brought forward, there is a debit balance of £535,342 to be carried forward. Some operating figures are compared herewith :—

| | 1939-40 | 1940-41 |
|---|---|---|
| Number of passengers | 57,065,760 | 57,317,121 |
| Public goods, tons | 7,766,407 | 7,134,025 |
| Train-kilometres | 25,161,000 | 23,322,000 |
| Ton-km. (goods and livestock) | 2,803,107,000 | 2,663,940,000 |
| Operating ratio, per cent. | 73·71 | 79·42 |
| | £ | £ |
| Passenger receipts | 2,660,101 | 2,586,168 |
| Goods receipts | 5,053,321 | 4,791,552 |
| Gross receipts | 10,493,421 | 10,173,446 |
| Working expenses | 7,735,115 | 8,079,640 |
| Net receipts | 2,758,306 | 2,093,806 |

In suburban passenger receipts there was an increase of £10,304, but main-line passenger earnings were down £78,379. Among other causes wet and chilly weather during the summer brought the holiday season to a premature close early in March. The first class receipts of £1,377,982 were £53,357 lower and represented 56·11 per cent. of total passenger receipts, exclusive of £130,478 Government traffic. Public goods tonnage as a whole dropped by 8·14 per cent., with a fall in revenue of 5·18 per cent.; the principal item was grain. Wheat despatches were better, but maize and all other cereals were lower by 23 per cent. Had it not been for the abnormal rise in the cost of fuel and imported materials generally, expenditure would have been appreciably less.

## Leopoldina Railway Co. Ltd.

ACCORDING to the report for the year 1940 decreases in currency receipts and in currency working expenses became increases in sterling in comparison with 1939 because of an improvement in the average rates of exchange for the two years. The comparative figures for the two years are also influenced by the fact that certain surcharge collections for the first half of 1939 were incorporated in the receipts for that year. To the net earnings of £108,694 for 1940 are added an exchange difference of £3,425, making total net receipts of £112,119, which, with the addition of £19,545 sundry credits, gives £131,664. Deducting £8,265 for premium on issue of debentures and £23,000 transfer to reserve for redemption of debenture stock leaves a balance of £100,399, which is insufficient by £263,315 to meet liabilities for debenture interest payments, etc.

Passenger traffic receipts showed a small decrease in currency, but in sterling an increase of £28,258 or 8·83 per cent. Outer suburban passenger movement was greater, but main line movement was lower. The first class passenger receipts of £209,893 were £16,775 higher and represented 60·26 per cent. of total passenger revenue, against 60·35 per cent. in 1939. In coffee, the chief traffic carried in full wagon loads, there was a decrease of 46,275 tons and £68,504, due to the loss of European markets and to shorter hauls during the last six months of the year. On the other hand, the policy of gradual rate adjustments, coupled with better sugar, bean, and grain crops, greatly assisted goods revenue. The steps initiated in 1939 to offer door-to-door facilities through an auxiliary road transport collection and delivery service also began to show good results. Some operating figures are compared herewith :—

| | 1939 | 1940 |
|---|---|---|
| Miles open | 1,918 | 1,918 |
| Passengers | 26,416,518 | 26,804,068 |
| Goods and livestock, tons | 1,688,809 | 1,769,581 |
| Public train-kilometres | 8,017,361 | 7,892,088 |
| Operating ratio, per cent. | 89·90 | 91·17 |
| | £ | £ |
| Passenger receipts | 320,023 | 348,281 |
| Goods and livestock receipts | 685,581 | 728,454 |
| Gross receipts | 1,154,745 | 1,230,748 |
| Working expenses | 1,038,154 | 1,121,784 |
| Net earnings | 116,591 | 108,694 |

Working expenses proper, by operation of trains and station costs in 1940 represented 44 per cent. of the total expenditure in currency, against 45 per cent. in 1939. The total fuel bill showed a saving of 6·1 per cent. The types of fuel in use included imported briquette coal, national coal, firewood, and oil. The saving arose partly from lower consumption and largely from the policy of burning greater quantities of firewood to economise imported fuel. Traffic train running expenses were reduced by 6·4 per cent., principally by further economies in brakesmen hours by use of vacuum-braked trains and closer control over trainmen's overtime. In pursuance of the reorganisation of the departmental structure of the railway the new administrative staff department had been inaugurated by September, 1940, and the movement and traction sections had been separated to constitute the nucleus of the future transportation department.

## Obscure Causes of Delay

MILLIONS nowadays have to make daily journeys between home and business, and only for the luckiest are these journeys in as few as three parts—namely, from home to bus or train, bus or train journey, from bus or train to place of work. A great many others have to change from one means of public transport to another, so that a considerable proportion of the total travelling time may consist of pedestrian movement. It is in such a phase of the journey that most delays are liable to occur, and unpunctuality on the part of any transport service often means much wasted time in missed connections; but the traveller himself—or herself—by a little thought has the power to reduce delays of other sorts. For example, where more than one pair of swing doors are provided, as at certain entrances and exits of underground stations, the thoughtless will follow one another through a single opening, leaving the other openings unused, and necessitating each person holding open the swing door for the next one. The proper method of using multiple swing doors is to go for the one that is closed, so enabling the person immediately ahead to let the door through which he is passing swing to on its spring, without having to stay his progress to prevent its hitting the next comer on the nose. It is astonishing how few persons think of this, and it would probably be more astonishing still if statistics were compiled to show the aggregate of delay caused to a stream of traffic by the failure to use properly such a facility as correctly-hung swing doors.

Another cause of delay, which may seem quite trifling, but which in the aggregate probably has an appreciable effect on delay, is the failure of many persons to walk straight, especially when climbing stairs to and from platforms. They tend to wander after the manner of sheep (which they may resemble in more senses than this), so that the faster-moving person behind cannot take a straight course, but has to dodge this way and that in order to get past. A few persons on a staircase behaving like this are of little importance, but when the staircase is crowded the matter becomes more serious. These thoughts prompt the suggestion that the designers of transport facilities in the future will have to pay more attention to the streamlining of passages for pedestrians, because it is probable that the cause of some of these eccentric phases of behaviour lies in disturbing elements of layout. Sharp bends in crowded passageways and on staircases should be replaced by broad curves, and just as the streamlining of the steam passages of the locomotive has greatly improved its efficiency, so probably the streamlining of passageways would contribute to speedy travel and greater human efficiency.

XUM

# LETTERS TO THE EDITOR

*(The Editor is not responsible for the opinions of correspondents)*

## "The Railway Gazette" in Wartime

Great Indian Peninsula Railway,
Chief Traffic Manager's Office,
Bombay, July 7

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I enclose my cheque in renewal of my subscriptions to THE RAILWAY GAZETTE and *The Railway Magazine*. In doing so, I should like to congratulate you on the continued excellence of your publications. I consider it is amazing that amongst the stress and trouble of present conditions you should find it possible to maintain so high a standard. To those of us whose duty lies in a country which has been spared the actual ravages of war it is indeed an inspiration to receive your papers so regularly and to read in them of the amazing accomplishments of the English railways which you so graphically record.

Yours faithfully,

J. I. PEARSE,
Assistant Traffic Manager

## Non-Smoking Accommodation

Westinghouse Brake & Signal Co. Ltd.,
82, York Way, King's Cross, London, N.1
October 24

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Referring to your leader on "A Simple Service to the Non-Smoker," as a traveller on all our railways it has often seemed to me none too easy for a non-smoker quickly to pick out non-smoking carriages. The difficulty arises partly through each railway having a different type of label on the windows. The most striking and easily identified is that on the London Underground railways which consists of the well known Underground red circle with the words NON-SMOKING in the centre. Further, these seem to be effectively stuck on the glass. I have not seen one torn away. Could not *all* the railway companies agree to use this same sign for non-smokers?

Yours faithfully,

L. J. LECLAIR

## Locomotive Improvements

3, Kensington Palace Gardens, W.8
October 23

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—The successful results obtained with the Franklyn steam distribution system described in your issue of October 10 are so remarkable that it is to be hoped that trials of a similar nature will be made in this country at various times.

Announcements have been made to the effect that certain locomotives have been fitted with poppet valve gear, and later that such gear has been replaced, but no results have been published, so that question arises as to whether this type of valve has received a really fair trial at the hands of the English companies. As to the Continent, the decision of the German Reichsbahn to adhere to piston valves is more than counterbalanced by the Chapelon results.

A few years ago the Central Argentine Railway took delivery of a batch of Pacifics fitted with Caprotti valves. These valves gave a great deal of trouble, but the Locomotive Department, instead of condemning the system, set to work to rectify matters. The trouble was traced to weakness in certain component parts. They were redesigned and fitted, since when the gear has proved to be thoroughly satisfactory.

Locomotive engineers have been extremely conservative (to put it politely), but now that the lessons of the late Mr. Churchward have been learnt, it is to be hoped that a scheme will be evolved under which progressive ideas will be given a fair run at the expense of the four companies.

P. M. BROOKE-HITCHING

## The Grand Northern Railroad

Bordyke, Burgess Hill,
Sussex, October 18

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I was interested to read your footnote to my letter which you published at page 377 in the October 17 issue. My opinion of the meaning of the inscription on the early Travelling Post Office agrees with that expressed in your editorial note, and the object of my original letter was, first, to place on record that there was no Grand Northern Railroad and, second, to see whether any of your readers could amplify the known information on the subject.

At least two Travelling Post Offices, which cost £600 each, must have been provided. They made a double journey daily. The times appear to have varied. At one period during 1839 they were :—

| Depart | | | Arrive | | |
|---|---|---|---|---|---|
| London ... ... | 9.30 a.m. | | Birmingham ... ... | 2.30 p.m. | |
| London ... ... | 8 p.m. | | Birmingham ... ... | 1.30 a.m. | |
| Birmingham ... ... | 8.30 a.m. | | London ... ... | 1.30 p.m. | |
| Birmingham ... ... | 12 midnight | | London ... ... | 5.30 a.m. | |

The stoppages were Tring 8 min., Wolverton 10 min., Weedon 3 min., and Coventry 9 min. This was prior to "London time being observed at all stations." Birmingham time was 7 min. 15 sec. slower than Euston.

The Post Office paid £24 4s. 4d. a day (£10,340 p.a.) to the railway for the service of the Travelling Post Offices, including the carriage of the mails, fares of two sorting clerks, and a porter to work the exchange apparatus. Weight to be carried "9 tons and a fraction."

Yours faithfully,

G. A. SEKON

## Railway Symbols

South Kensington
October 18

TO THE EDITOR OF THE RAILWAY GAZETTE

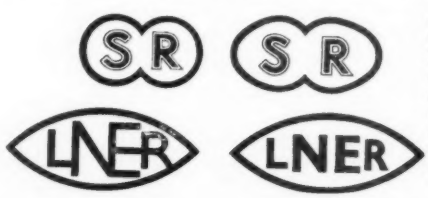
SIR,—It is perhaps only a hyperbole on your part to describe the Southern Railway symbol—as you do on page 392 of your October 17 issue—as enclosed in an indented ellipse. The enclosure is shown in your drawing to be two intersecting circles, which I should imagine does not present so pleasing an appearance as a true ellipse indented. Perhaps you could present us with adjacent drawings of the two designs so that readers may judge?

While writing on the subject of symbols, I wonder why the L.N.E.R. has quietly abandoned the "totem" which Eric Gill designed for the company and which you illustrated in THE RAILWAY GAZETTE of March 10, 1933 (page 327)?

Yours faithfully,

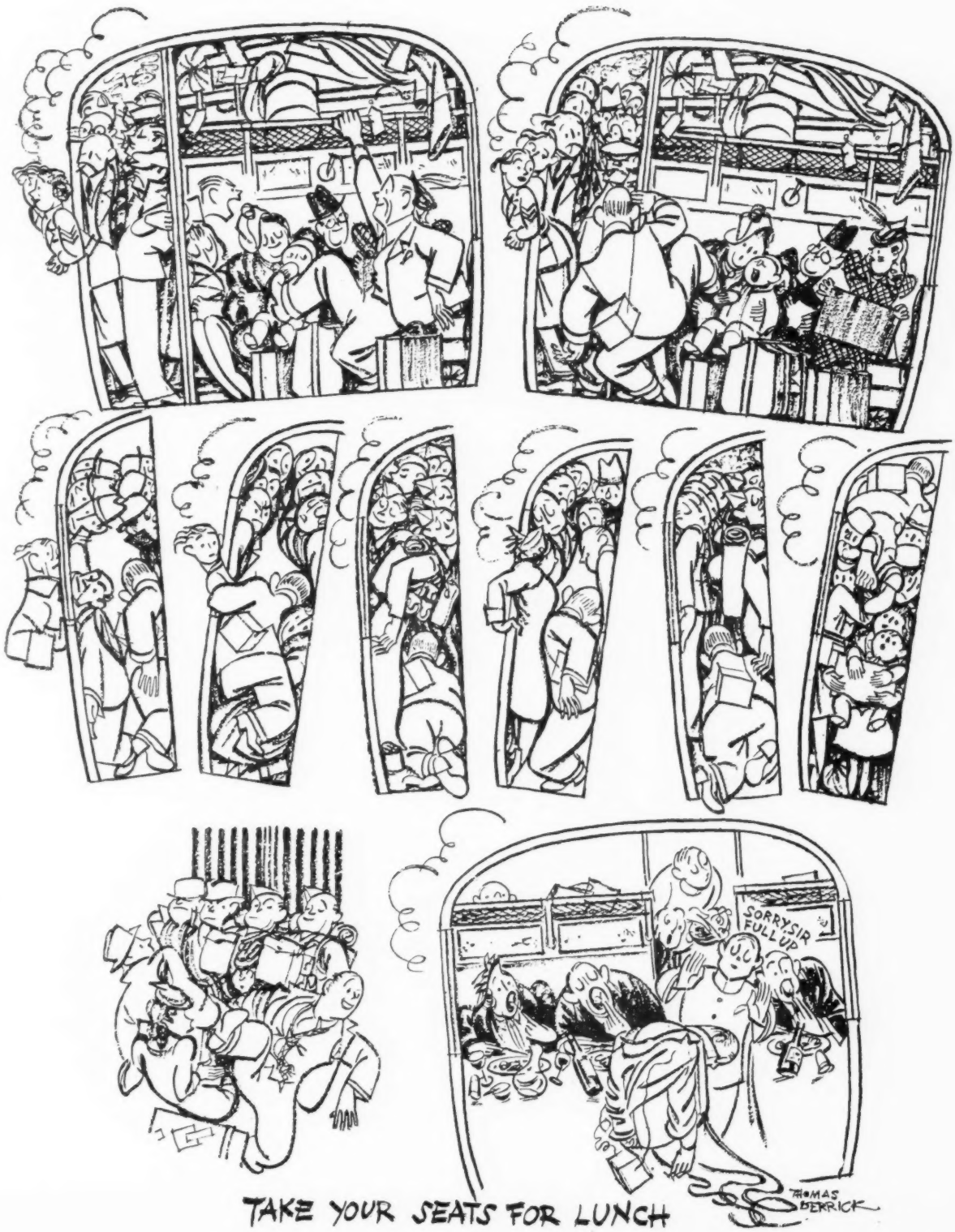
CONIC SECTION

[We reproduce the current Southern Railway symbol, together with a design according more accurately with the official description of "an indented ellipse." We prefer the design selected. For comparison we also show the original Eric Gill totem of the L. N. E. R. alongside the revised symbol now in use.




—ED., *R.G.*]

# THE SCRAP HEAP




TAKE YOUR SEATS FOR LUNCH

Reproduced by permission of the Proprietors of "Punch"

# OVERSEAS RAILWAY AFFAIRS

*(From our special correspondents)*

## ARGENTINA

### Argentine-Chilean Railway Construction

The Argentine Government has issued a Decree authorising the State Railway administration to resume work on the construction of the uncompleted portion of the Argentine section of the projected international railway between Salta, Argentina, and Socompa on the Chilean frontier, which has been suspended for several years. The Government programme provides for an annual expenditure of $6,500,000 pesos during the years 1942 to 1945, and $7,000,000 pesos during 1946, by which time it is estimated that the entire work should be finished. The State Railways administration is authorised to arrange for the purchase of 100 km. of rails and other track materials for delivery, if possible during 1942. The necessary funds will be provided out of the cash resources amounting to over $35,500,000 pesos which the State Railways had in hand on December 31, 1940.

### Coal Development

It is now stated that the Argentine Government proposes to declare the entire territories of the Rio Negro, Neuquen, and Chubut as a national coal reserve (THE RAILWAY GAZETTE of July 25 last). The prospecting and working rights are to be vested exclusively in the State Oilfields, and a Decree to this effect will shortly be issued by the Ministry of Agriculture. It is stated that financial credits will be granted to private concerns engaged in working the existing coal deposits or any others that may be discovered, the sum of $10,000,000 pesos being allocated for this purpose. Minimum prices will be fixed for locally-mined coal, the marketing of which will be in the hands of the National Oilfields.

### Fatal Accident on State Railways

A collision, attended by fatal results, occurred at Simoca station on the State Railways in the Province of Tucumán on August 4. The accident was due to a special service train from Tucumán crashing head-on into a goods train which was standing in the marshalling yard at Simoca station. Both the locomotives and a number of the wagons in both trains were derailed, considerable damage being caused to the rolling stock, and some of the wagons being completely destroyed. Both the drivers were killed, and the firemen seriously injured. The collision is attributed to an error on the part of the station-master in accepting the service train before clearing the marshalling yard.

## CHILE

### Storms in the Andes

Exceptionally severe snowstorms were experienced on both sides of the Andes during August, resulting in considerable damage to some of the railways—on which traffic was totally interrupted for days—and some loss of life. Aerial communications between Argentina and Chile were also suspended for several days. Caracoles station on the Chilean Transandine Railway was demolished by an avalanche, eight persons being killed. Near Concepción a landslide fell on the track as a train was passing; one passenger was killed. Communications were interrupted at several points on the Chilean Longitudinal Railway. Near Illapel station, a train with 40 passengers was held up between two landslides. On the Argentine side, very heavy snowfalls were reported practically throughout the entire zone between Las Cuevas and Mendoza, with temperatures varying between 20° and 30° C. below zero. Railway workers, who were snowbound at isolated points, and were in danger of a food shortage, were provisioned by Government aeroplanes. At the time of writing it is estimated that it will take at least two months to restore the communications.

## PERU-BRAZIL

### New Transcontinental Air Service

Pan-American Grace Airways Inc. has inaugurated a new transcontinental air service between Lima (Peru) and Rio de Janeiro. The service, which began in August this year, is weekly in each direction, and the route and stopping-places are the same in each direction. The itinerary of the first day's trip is as follows: Lima (Peru), Arequipa, Oruro, Cochabamba, and Santa Cruz (Bolivia); second day: Santa Cruz, Puerto Suarez, and Corumbá (Brazilian frontier); third day: Corumbá, Campo Grande, Tres Lagoas, Sao Paulo, and Rio de Janeiro. The distance is approximately 2,600 miles, and the time occupied on the journey is about 18 hours.

## INDIA

### Defence Services Exhibition Train

The recently assembled and equipped Defence Services Exhibition train [referred to in Transport Services & the War columns, on page 420 of our October 24 issue.—ED., *R.G.*] left Lahore on October 17 on a five months' tour of India. Its object is to show the progress being made in the production of war materials in India and call attention to the gallantry of Indian troops in various theatres of war. Among the exhibits are a 4-in. Naval gun, a tank, a field gun, an armoured carrier and an advanced dressing station. Models of warships and transport vehicles are also on show.

## EIRE

### Royal Canal Lift Bridge, Dublin

Built to drawings and specifications prepared by Mr. G. J. Murphy, Chief Engineer of the Great Southern Railways in consultation with the City and Port & Docks Board Engineers, the new lift bridge across the Royal Canal at Sheriff Street, Dublin, was opened for traffic on October 17. It replaces an old lift bridge worked by hand, and, being electrically operated, can be opened in 70 sec. An emergency hand-worked mechanism is also fitted, by which the bridge can be opened in 15 min., should the electrical gear be out of commission. Safety gates and signals interlocked with the bridge insure that the latter can be opened only when the gates are closed and signals stop traffic.

The total cost is placed at £18,000, of which the City will subscribe the major share, the G.S.R. and Port & Docks Board also contributing. The G.S.R. acted as agent for the Corporation in the placing of most of the contracts, and the bulk of the work was supervised by Mr. Murphy and his engineering staff. The lifting span was supplied by Smith & Pearson Limited, of Newcomen Works, North Strand.

## UNITED STATES

### New Orleans—Gouldsboro Car Ferry Closing

On page 499 THE RAILWAY GAZETTE of May 2 last announced the last trip of the famous ferry vessel *Gouldsboro*. Also with reference to the article entitled "New Mississippi Combined Rail and Road Bridge" published in the issue of October 3 last, it is now learnt that, upon orders recently issued by the Interstate Commerce Commission, the train ferry service between Gouldsboro and New Orleans is being closed altogether. All traffic over the Missouri Pacific and Texas Pacific (joint) Terminal lines formerly using this ferry will in future be routed over the Huey P. Long bridge which spans the Mississippi about 9 miles west of New Orleans. This gives the two main-line companies concerned through running powers over the bridge and Public Belt lines into their Tchoupitoulas Street joint terminal in New Orleans. This change will necessitate the building of a big new yard at Avondale on the west bank.

### Pennsylvania Developments

In addition to the Jeffersonian—a new all-coach high-speed train between St. Louis and New York—the Pennsylvania Railroad is concerned in a number of important train service developments which recently became effective. One is a new evening service from Washington to Boston, called the Patriot, which the New York, New Haven & Hartford takes forward from New York at 6 p.m.—the latest evening departure ever given from New York for Boston, reached at 10.40 p.m. The southbound Patriot leaves Boston at 2 p.m. Later evening express services are similarly given from New York at 8.30 p.m. to Washington, called the Constitution, taking 3¾ hr., and a 4 hr. express from Washington at 7.30 p.m. for New York.

On the New York—Middle West service, in addition to the Jeffersonian (which leaves New York for St. Louis at 5.55 p.m., and St. Louis for New York at 12.30 p.m.), an eastbound all-Pullman Golden Arrow, from Chicago to New York in 17 hr., has been put on to balance the westbound working, and the eastbound Manhattan Limited, leaving Chicago for New York at 11.30 p.m., has been accelerated by 70 min. to a time of 18 hr. 10 min. over this route of 902½ miles. Another new Pennsylvania train is the Red Bird, which in conjunction with the Wabash covers the 294 miles by this route in 4¾ hr., and with the famous Detroit Arrow gives morning and evening service in each direction. This is in competition with the 4¾ hr. Mercury and Twilight Limited services of the New York Central between Detroit and Chicago.

## SWEDEN

### General Managers Confer

The General Manager of the Swedish State Railways, Mr. Dahlbeck, has been on a visit to the President of the Reichsbahn, Dr. Dorpmüller, in Berlin, to discuss outstanding traffic problems between the two countries. During his stay in Germany from September 20 to the end of the month, Mr. Dahlbeck was taken on a tour to Cologne, Alsace, Munich, and Austria.

# TRACK DRAINAGE ON THE NEW HAVEN RAILROAD

*Two sections of four-track road, one in tunnel and one in cutting, are effectively drained by systems of Armco corrugated pipes*

AT Hartford, on the New York, New Haven & Hartford Railroad, longstanding drainage trouble has now been eliminated at two places, one in tunnel and the other in the open, but both on a section of quadruple running track. The tunnel section, built in 1871 as cut and cover, is 300 ft. in length and consists of twin stone masonry arches, with a 4-ft.-thick stone and lime mortar raft or mattress laid continuously under the tracks—between the footings of each arch to act as a strut. When the tunnels were built the sleepers were let into these rafts, and when they were subsequently raised on to ballast the thickness of the rafts had to be reduced in order to provide sufficient arch clearance. Water lodged on the rafts and caused the ballast to become muddy, inducing joint-pumping and also heaving as a result of frost action in winter, this again affecting clearances. Men had constantly to be employed in these tunnels.

Moreover, the subsoil beneath the rafts was found to be saturated clay with water pockets in it; the lime mortar in the rafts was also found to have deteriorated extensively.

### Remedial Tunnel Drainage System

The remedy was provided in the form of a longitudinal 8-in. perforated Armco corrugated pipe between the tracks in each tunnel, at a level of just under 6 ft. below rail level at one end sloping to a little over 7 ft. at the other, or with a 1 in 250 fall. From these longitudinal drains branches 10 ft. in length take off alternately on each side at intervals of about 25 ft., and riser pipes are placed at the outer end of each branch pipe and at its junction with the longitudinal drain, to collect surface water; cast-iron gratings are fitted at the tops of the riser pipes.

All the pipes are 8 in. in diameter and are laid in trenches with the perforations downwards on 4 in. of pit-run gravel, with which the trenches were also filled. The corrugated pipes are fully coated, asbestos-bonded, and paved.

The work was carried out one tunnel at a time, all traffic being run through the other meanwhile. To excavate the various trenches, the parts of the raft above them were cut out with pneumatic hammers, and to maintain the strut action thus destroyed, 12 in. × 12 in. timber struts were inserted in each ditch at 10 ft. spacings, and were left in place permanently. As the water could not be disposed of by gravity, it has to be pumped into a convenient sewer; under normal conditions about 3,500 gal. are pumped out in 24 hr.

### Drainage in Shallow Cutting

The other length of line where a drainage problem had to be solved was throughout a 1,500 ft. shallow cutting, where there is a siding running parallel to the four running tracks. Here the subsoil was of clay overlying sand and the ground-water table was only 3 ft. to 3 ft. 6 in. below rail level, and was flowing or seeping across the railway. The ballast was found to be from 3 ft. to 4 ft. deep, and the surface water was percolating into a number of ballast pockets making the roadbed unstable. In order to reduce the level of the ground-water table, the subsurface water had to be intercepted instead of flowing towards the tracks, and all subsurface water finding its way into the ballast pockets and roadbed generally had to be drained away. In addition, all surface water falling on the formation had to be removed before it could penetrate below the surface.

The measures taken to secure these ends consisted of the laying of two lines of subsurface longitudinal drains similar to those in the tunnels but 12 in. in diameter. One of these drains was laid under the ditch on the " upstream " side of the line, to intercept the inward flow, and the other was laid between the " downstream " running track and the siding beside it. At 50-ft. intervals cross drains were laid to connect the longitudinals, and in the centre of each cross drain a riser was fitted between the two middle running tracks; the cross drains and risers are 8 in. in diameter. At some of the longitudinal and cross drain junctions, 2 ft. 6 in. perforated corrugated pipes were inserted as catch basins and these, like the risers, have cast-iron grid tops. The longitudinals are laid throughout the 1,500 ft. at a gradient of 1 in 333, and at the lower end a 12-in. cross drain connects them. At the junction of this cross drain with the " downstream " longitudinal drain is a 3 ft. 6 in. dia. catch basin drained by a 12-in. outfall drain.

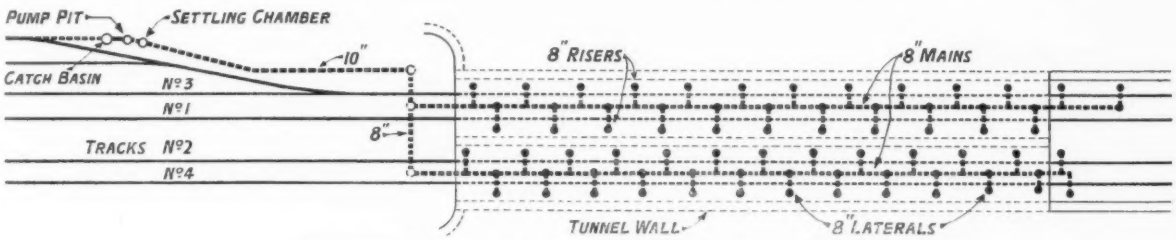



*Diagram showing the drainage layout in the tunnel section*

All these drains were laid in gravel-filled trenches as in the tunnel drainage system, but the cross drains were laid by the tunnelling method and the mains by open excavation. After a dry spell the measured discharge of this system in the cutting was 350 gal. an hour, but after 36-hr. rain it rose to 1,500 gal.; following a period of several days' intermittent heavy rain a maximum discharge of 2,500 gal. an hour was recorded, according to our American contemporary *Railway Engineering and Maintenance*, from which the diagram is reproduced.

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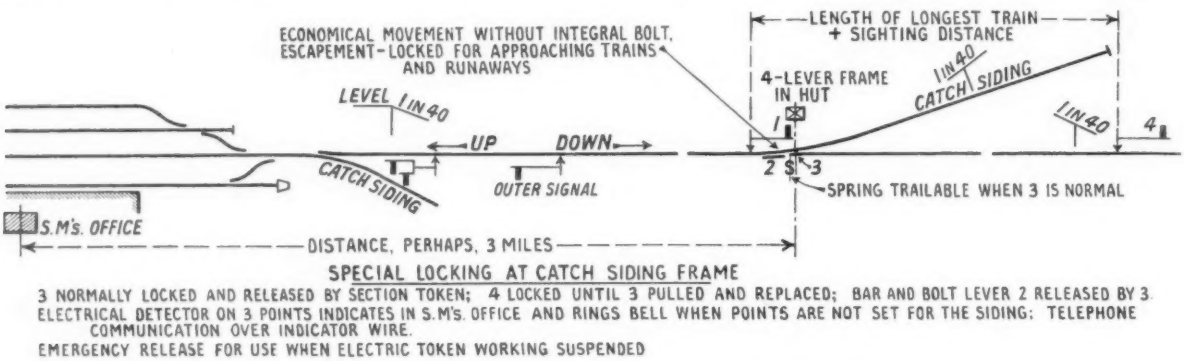
NEW ENQUIRY OFFICE AT CAMBRIDGE STATION, L.N.E.R.—On July 31 the work of dealing with public enquiries at Cambridge passenger station, L.N.E.R., was transferred from the offices of the stationmaster and the parcels department to a separate office specially adapted for handling an increasing volume of that branch of the company's business. The new office occupies a central position and gives service to the main platform and to the booking hall. The latter facility dispenses with the former custom of personal callers from the town having to gain access to the closed platform before an enquiry could be made. Very little cost and few structural alterations were involved in the change, the accommodation taken having been used as a tobacco and confectionary kiosk, which business has been transferred to a spare passimeter office brought in from elsewhere and re-erected in close proximity.

# CATCH SIDING INTERLOCKING IN INDIA

## *The Madras & Southern Mahratta Railway finds special catch point working necessary at certain locations on steep grades*

THE following brief particulars, with explanatory diagram, are taken from an article in the Indian *Quarterly Technical Bulletin* for January 1941 by Mr. A. C. Rose, Deputy General Manager, M. & S.M.R., and will be of interest to officers of other overseas railways where long steep grades are encountered, as on the *ghat* sections in India and Burma. The article points out that automatic catch points are simple, cheap, and effective on double lines, but that some ingenuity and expense are necessary to meet the case of single line working, where such points must be securely locked for movements in the facing direction. In India and Burma the prevalence of long steep gradients on certain sections calls for special precautions against runaways. A typical location of this kind is shown on the accompanying diagram, where it is essential to prevent a train in whole or in part running away down the 1 in 40 incline. As regards ascending trains, it is not practicable in this case to adopt " A " class working, under which a train may not be accepted unless the line is clear to the starting signal, and an outer signal, as required by " B " class working, is therefore installed. Trains are, however, not stopped thereat in ordinary regular working, but might have to be in an emergency, so that the catch siding in rear is required to meet the case of a breakaway when re-starting. This siding also serves another and very important purpose. In cases where all trains are not vacuum fitted, descending trains have to be heavily braked by weighted levers, but not more than two-thirds of this brake power can be applied in the station, as it would make starting too difficult. A stop must therefore be made on the grade to apply the remaining third. The rules prescribe a stop before reaching the catch points, which should be standing for the siding, and the signalling now illustrated is intended to secure obedience thereto. The working will be clear from reading the wording on the diagram. It is to be specially noted that the lever (No. 3) used to set the points for a down movement cannot be pulled without the temporary presence of the section token, brought from the station by the train, the mechanism being designed to allow it to be obtained again as soon as the lever has been reversed. The point lever must in due course be restored to normal behind the train—making the points spring points once more—to allow of the down starting signal ahead being cleared, when it becomes locked and cannot be moved again until a token is once more inserted in the apparatus. While the starting signal lever is reversed the point lever is locked by the ordinary frame locking.




SPECIAL LOCKING AT CATCH SIDING FRAME

3 NORMALLY LOCKED AND RELEASED BY SECTION TOKEN; 4 LOCKED UNTIL 3 PULLED AND REPLACED; BAR AND BOLT LEVER 2 RELEASED BY 3.
ELECTRICAL DETECTOR ON 3 POINTS INDICATES IN S.M's. OFFICE AND RINGS BELL WHEN POINTS ARE NOT SET FOR THE SIDING; TELEPHONE COMMUNICATION OVER INDICATOR WIRE.
EMERGENCY RELEASE FOR USE WHEN ELECTRIC TOKEN WORKING SUSPENDED

*Special catch siding interlocking arrangements, M. & S.M.R.*

### Method of Working

(*a*) Down Trains.—Before obtaining " line is clear " the stationmaster observes that the electric indicator in his office shows the catch points to be set for the siding. The driver whistles on approaching signal No. 1 and stops as near thereto as possible. The fireman takes the token to No. 3 lever and releases it, the pointsman pulls it over, bolts the points for the main line, and then clears the home signal. The fireman returns to the engine with the token. As soon as the train has cleared the points the pointsman restores No. 3 lever, which becomes automatically token locked, and can then pull over No. 4 to allow the train to proceed on its way. Should the point indicator show that the points are not set for the catch siding the stationmaster issues a caution order to the driver and proceeds there to investigate and ensure safe working.

(*b*) Up Trains.—The stationmaster assures himself that the points are correctly set for the catch siding before granting " line clear." No action at the points is necessary beyond ensuring that No. 4 is normal, but as the train trails through them the operation of the electrical detector rings the bell in the stationmaster's office, reminding him to clear his outer signal to prevent the train from being irregularly stopped on the steep grade.

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AVERAGE AGE OF EMPLOYEES ON U.S.A. RAILWAYS.—In the early part of this year when the U.S.A. Army authorities desired to buy a railway for the purpose of training a railway operating battalion—a practice not found necessary in America during the last war—it was pointed out that 25 years ago the average age of railway employees in the U.S.A. was such that the Army could secure men of an age suitable for military work from among railway employees. It was then stated that in 1938 the average age was 46 years, including the young labourers on maintenance-of-way work. Recently the Railroad Retirement Board announced that about 50 per cent. of the railway employees in active serivce in the U.S.A. in 1939 were from 35 to 55 years old; 31 per cent. were under 35; and slightly over 18 per cent. were 55 or older. The average age, according to the board, was 42·5 years. The largest number was in the group from 40 to 44 years of age and totalled 207,950 or 13 per cent. From 45 to 49 years of age there were 206,788 or 12·9 per cent. Taking employees with 10 to 12 service months, the average was 46·1 years. In that class, the largest number was in the group from 45 to 49 years of age and totalled 174,283 or 15·8 per cent. The next largest group was from 50 to 54 years of age and totalled 166,368 or 15·1 per cent. The average age of employees with from 1 to 9 service months was 31·3 years, and in that case the largest number was in the group from 20 to 24 years of age and totalled 115,267 or 23·7 per cent.

# THE LOCOMOTIVE IN MECHANICAL ENGINEERING

## *Mr. W. A. Stanier's presidential address to the Institution of Mechanical Engineers*

THE presidential address delivered by Mr. W. A. Stanier to the Institution of Mechanical Engineers on October 24, had as its title "The Position of the Locomotive in Mechanical Engineering." It dealt with the present and future positions of the steam locomotive in connection with railway operation. In his opening Mr. Stanier referred to the association between railways and the institution, in the foundation of which locomotive engineers, headed by George Stephenson, its first President, played no small part. In passing he paid tribute to the late G. J. Churchward, whose practice on the Great Western Railway has been adopted and developed gradually on all the other British railways.

By the fifties of last century the details of British locomotive design had become stabilised largely as a result of the work of John Ramsbottom, who introduced split piston rings of iron, steel, or brass; and from that time until the beginning of the present century almost the sole increase in basic thermal efficiency, in which respect locomotive engineering has lagged behind the advances made in the use of steam in marine and land installation, was that due to an increase in average boiler pressure of from 140 lb. per sq. in. to 180 lb. per sq. in.

Apart from isolated instances, the first considerable and lasting breakaway from the almost traditional form in this country was, as already stated, the work of Churchward. In pioneer work carried out from 1902 onwards, a gain was made in theoretical efficiency by extending the heat range, both upwards, by increasing the boiler pressure to 225 lb. per sq. in., and downwards, by reducing the exhaust pressure as a result of improved valve events. The gain in actual efficiency was even more marked, owing to the big cut in cylinder losses—hitherto looked upon as unavoidable—achieved by the use of long-lap valves, and cylinders with direct ports and passages and minimum clearance volume. Churchward had the vision and the courage to combine all these features, some of them borrowed from French and American practice, into a range of simple standard locomotives which were many years ahead of their time. Realising that his own designs with their greatly improved cylinder efficiency, produced results as good as, if not better than, the superheated engines on other lines, he contented himself with applying only a low degree of superheat, with steam temperatures in the region of 500° F. Thus the third stage of improvement, that of combining improved cylinder and valve gear design with steam temperatures of 600° F. or so, was delayed until the period of the last war, except for a single small class of 4-4-0 engines on the Lancashire & Yorkshire Railway which combined these features almost by accident in 1908, the true value of which was not appreciated by the owning company.

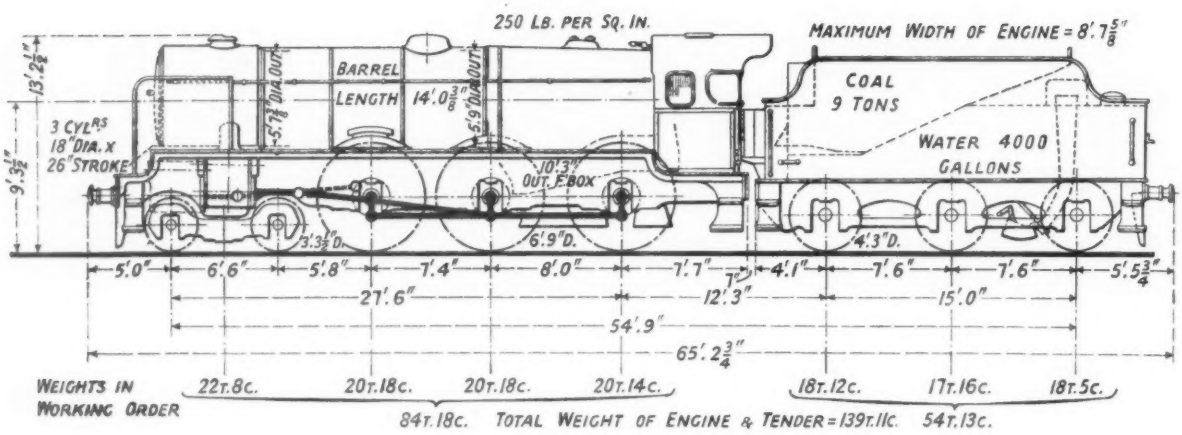
The most recent stage of development has been a general refining of all the above features of design, and their application to the smaller as well as the larger types of engines. As examples recent standard L.M.S.R. locomotives were shown in a series of lantern slides, and dimensioned outline drawings are reproduced on pages 440 and 442.

The advance in the past twenty years has been facilitated by the railway grouping which, by bringing all kinds of locomotives into open competition which had never previously been compared on the same work, threw into high relief those types which were inferior, and made it possible to justify their replacement by more economical units. Many heroic individual attempts have been made to break away from normal designs, but without any of them having a lasting influence. Chief of these have been the continually recurring attempts to adopt compound expansion, offering certain advantages, at least in theory.

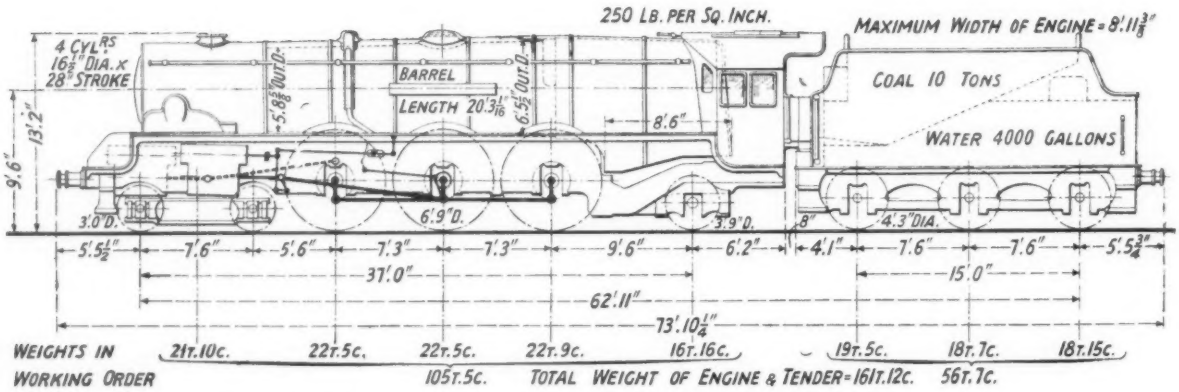
Turbines with condensing plant, and high-pressure water-tube boilers, have been tried in a number of ingenious applications, but none survives in this country at the present time. Indeed, the only "abnormal" locomotive type available for everyday active service is the L.M.S.R. turbine locomotive, which substitutes in the simplest possible manner a turbine and gear drive for the normal reciprocating layout. No condenser is fitted, so the increase in basic thermal efficiency compared with a standard locomotive is small. There are possibilities, however, of more economical working at high power outputs, while the purely rotary working parts being totally enclosed, may promote lower upkeep costs. This engine has now run 185,700 miles in express service, but data are not yet available for a final summing up of all the results. Some particulars of its fuel consumption in comparison with that of normal types is given in the table below.

**DYNAMOMETER CAR TEST RESULTS WITH VARIOUS L.M.S.R. LOCOMOTIVES**

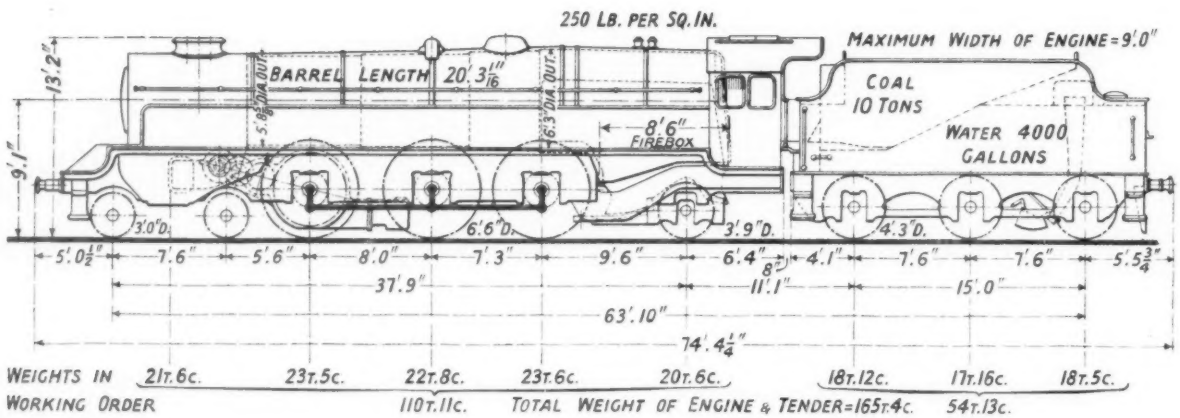
| Route, miles | Euston-Carlisle and back; 300 each way | | | Euston-Glasgow 402 | | | Euston-Glasgow and back; 402 each way | Crewe-Glasgow and back; 244 each way | St. Pancras-Leeds and back; 196 each way | |
|---|---|---|---|---|---|---|---|---|---|---|
| Col. | A | B | C | D | E | F | G | H | J | K |
| Engine No. | 5917 | 6158 | | 6210 | 6202 | 6225 | 6220 | 6234 | 5067 | 5079 |
| Class | 4-cylinder 4-6-0 *Claughton*; principal express type 1913-27 | 3-cylinder 4-6-0 *Royal Scot*; principal express type 1927-33 | | 4-cylinder 4-6-2 *Princess Royal*; introduced 1933 | 4-6-2 "Turbomotive"; built 1935 | 4-cylinder 4-6-2 *Coronation* | | | 2-cylinder 4-6-0 mixed traffic | |
| | | Low mileage | High mileage | | | Light load | Normal *Coronation Scot* load and timing | Maximum load | 14-element superheater; 500° F. | 21-element superheater; 580° F. |
| Miles since last piston and valve examination | 12,506 | 6,480 | 22,770 | 1,718 | | 3,502 | 220 | 20,733 | 20,600 | 4,622 |
| Miles since last heavy repair | 12,506 | 6,480 | 92,270 | 98,977 | 102,915 | 3,502 | 29,788 | 50,107 | 20,600 | 4,622 |
| Average weight of train, tons | 347 | 440 | 440 | 522 | 485 | 232 | 331 | 604 | 292 | 292 |
| Average running speed, m.p.h. | 51·2 | 52·1 | 52·1 | 52·0 | 55·0 | 59·2 | 60·4 | 55·2 | 51·9 | 50·9 |
| Coal consumption— | | | | | | | | | | |
| Lb. per mile | 46·6 | 37·1 | 39·3 | 45·0 | 41·6 | 28·2 | 39·2 | 68·7 | 49·5 | 43·7 |
| Lb. per ton-mile (including engine) | 0·101 | 0·066 | 0·069 | 0·068 | 0·067 | 0·073 | 0·080 | 0·091 | 0·098 | 0·085 |
| Lb. per drawbar h.p.-hr. | 5·03 | 3·25 | 3·50 | 2·98 | 2·78 | 3·32 | 3·03 | 3·12 | 3·97 | 3·23 |
| Lb. per sq. ft. grate per hr. | 79·2 | 62·4 | 65·1 | 62·2 | 50·7 | 33·4 | 47·3 | 75·7 | 74·1 | 63·6 |
| Water consumption— | | | | | | | | | | |
| Gal. per mile | 32·1 | 30·3 | 33·1 | 37·3 | 37·1 | 26·7 | 32·3 | 52·1 | 38·2 | 32·8 |
| Lb. per drawbar h.p.-hr. | 34·5 | 26·5 | 29·5 | 24·7 | 24·8 | 31·6 | 25·0 | 24·1 | 30·6 | 24·3 |
| Evaporation, lb. water per lb. coal | 6·9 | 8·15 | 8·41 | 8·30 | 8·93 | 9·51 | 8·24 | 7·74 | 7·72 | 7·49 |




*"Royal Scot" class 3-cylinder 4-6-0 locomotive; the principal express type, 1927-1933*




*"Coronation" class 4-cylinder 4-6-2 locomotive; the most powerful class today*




*Turbine Pacific type experimental express locomotive built in 1935. This engine has now run 185,700 miles in express service*

*MODERN L.M.S.R. EXPRESS LOCOMOTIVES*

Many factors influence the cost of traction per ton-mile, of which fuel consumption is only one, but thermal efficiency is particularly within the province of the mechanical engineer. Hitherto we have been without means in this country for the scientific testing of locomotives. Comparative testing there has been in plenty, but because the locomotive travels over an undulating track and within severe restrictions of space and weight, and moreover since its operating conditions call for continual variation in speed and load, it has been much more difficult than in land or marine work to isolate all the variables, and obtain absolute test figures for the amount of heat turned into useful work in the cylinders.

Thermally, the boiler is the most satisfactory part of a locomotive. The high heat absorption rate of the water-enclosed inner firebox, and the rapid heat transfer arising from high gas speeds along the tubes, combine to produce a high heating surface efficiency which does not drop appreciably at the maximum output of which the boiler is capable. The principal loss is that due to fuel being drawn off the firebed by the fierceness of the draft and expelled unburned from the tubes, at high output of power. The overall efficiency exceeds 80 per cent. at low rates of combustion, and falls along a practically straight line to about 50 per cent. when the boiler is forced to the limit of its output which corresponds to about 200 lb. of coal per sq. ft. of grate per hr. Boilers which are proportioned to work at an average firing rate of 50-60 lb. per sq. ft. of grate per hr. are capable of maintaining efficiencies in the region of 75 per cent., a figure which bears comparison with other types. The efficiency cited holds good for a wide variety of individual designs, and this type of boiler has also further solid advantages. It follows varying demands with great rapidity, having a considerable thermal storage capacity in the large quantity of water carried. It is capable of severe overload and is not too sensitive to the quality of the water, while its weight and size are very moderate in relation to the output. Its cylindrical body possesses considerable rigidity and strength.

Without condensing, the thermal gains due to increasing the working pressure are only obtained at a diminishing rate, and beyond about 300 lb. per sq. in. the gain due to successive increments in pressure falls away rapidly. Since it is possible to design a normal locomotive type boiler for such a pressure, there is, therefore, little justification for departing from the conventional type merely to secure thermal gains, and alternative water-tube designs are attractive only as a possible means of eliminating stays, to assist mechanical maintenance; they become of real interest as higher working pressures are envisaged in conjunction with condensing.

## Engine Efficiency

A careful distinction must be made in considering engine efficiency. As the table above shows, the theoretical thermal efficiency even today lags far behind that of the power station, but this is largely due to the difficulties of finding space for the essential features of high-pressure turbo-condensing design as well as in the accompanying weight restrictions. Thus in basic efficiency it is physical limitations which have offered obstacles to progress. In its utilisation of the available theoretical efficiency, on the other hand, the locomotive has a very good record of progress, and the best modern designs are capable of realising in the cylinders as much as 84 per cent. of the utmost that theory allows.

As against this, a large number of the older engines still running do not achieve more than 60 per cent. in this respect, due to severe cylinder losses. Such losses have been greatly reduced by superheating, by the introduction of valves and pistons having numerous narrow rings, by improved lubrication, and long-lap valve gear. More recently, the work of Chapelon in France has underlined the importance of sufficient area of valves, ports, and passages, and the benefit of streamlining them internally as far as possible, to reduce resistance to the flow of steam; and modern cylinder designs have been still further improved in this respect.

All the last-mentioned improvements are applicable to the normal simple-expansion engine, and at the outbreak of the war, designs were on the board for a modified *Coronation* Pacific type engine which would carry 300 lb. per sq. in. boiler pressure and a steam temperature of 750° F., embodying the main results of Chapelon's investigations, but without making use of compound expansion.

## Locomotive Compounding and Testing

On the subject of locomotive compounding, Mr. Stanier said we could understand now why the French " De Glehn " compounds imported by the Great Western Railway in 1903 and 1905 did not give results superior to the simple-expansion designs of Churchward. Chapelon's work has indicated how serious were the effects of restrictions in ports and passages in this early design. Now that modern French investigation has so extended our knowledge of how a compound locomotive should be designed, the question naturally arises: Why should we not in this country abandon simple for compound expansion?

The answer is that the thermal gain would be more than counteracted by a mechanical loss, and it is impracticable to combine within the British loading gauge both the large low-pressure cylinders which are required and the bearing and crank dimensions shown by experience to be essential for freedom from heated bearings and for high mileage between repairs. This is shown in the diagram on page 442.

In England much testing has been undertaken on the road under service conditions at variable speeds. This form of testing can be carried out without expensive equipment, and early in the history of the Great Western Railway, Sir Daniel Gooch built a dynamometer car for testing locomotives on the road. Indeed, in its simplest form no other measurements were taken than the weight of coal and water used, the weight of the train, and the distance run. Fuel consumptions per ton-mile are capable of locating the effect of major alterations, provided a sufficient number of runs are made under identical conditions of engine working and loading, in order to smooth out the effect of variation in running resistance from day to day. Continuous measurement of the work done at the draw-bar by means of a dynamometer gives much more accurate results, and is the most widespread form of testing at present. The results are

**APPROXIMATE BEST THERMAL EFFICIENCIES OF VARIOUS STEAM LOCOMOTIVES**

| | Representative saturated locomotive built c. 1880 | Representative superheated locomotive built c. 1912 | L.M.S.R. *Coronation* superheated 4-6-2 | Chapelon superheated 4-8-0- compound | Advanced steam power station practice electric drive* |
|---|---|---|---|---|---|
| Working pressure, lb. per sq. in. | 160 | 180 | 250 | 295 | 1,350 |
| Steam temperature, ° F. | 371 | 580 | 615 | 750 | 950 |
| Heat drop, B.Th.U. per lb. of steam | 150·8 | 187 | 213·8 | 253 | 610 |
| Theoretical efficiency of cycle (Rankine), per cent. | 12·8 | 15·4 | 17·2 | 19·7 | 48 |
| Theoretical steam consumption per i.h.p.-hr., lb. | 16·9 | 13·6 | 11·9 | 10·0 | — |
| Actual engine cycle efficiency, per cent. | 7·64 | 9·6 | 14·2 | 16·5 | 38·0† |
| Estimated steam per i.h.p.-hr., lb. | 28·3 | 22·0 | 14·5 | 11·7 | — |
| Ratio of actual efficiency to theoretical efficiency of engine, per cent. | 60 | 62 | 82 | 84 | 79 |
| Boiler efficiency, per cent. | 68 | 75 | 76 | 78 | 90 |
| Overall thermal efficiency of locomotive on i.h.p. basis, per cent. | 5·2 | 7·2 | 10·8 | 12·8 | 34·2‡ |

* Based on particulars given in Sir Leonard Pearce's Thomas Hawksley Lecture, Proc.I.Mech.E., 1939, vol. 142, p. 305.
† Overall efficiency based on units generated, *i.e.*, including factor for efficiency of generator.
‡ Efficiency at motor shaft, corresponding as nearly as possible to efficiency in cylinder of direct-drive steam locomotive, *i.e.*, minus the final drive in each case.

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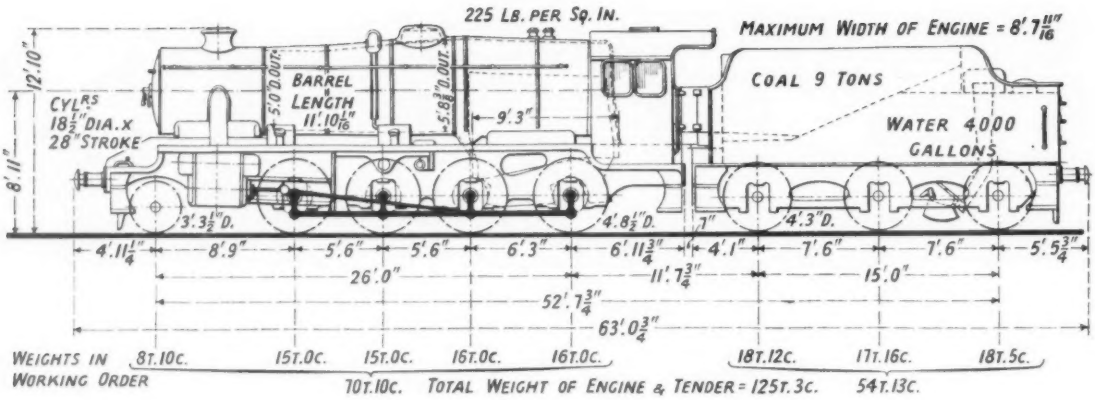
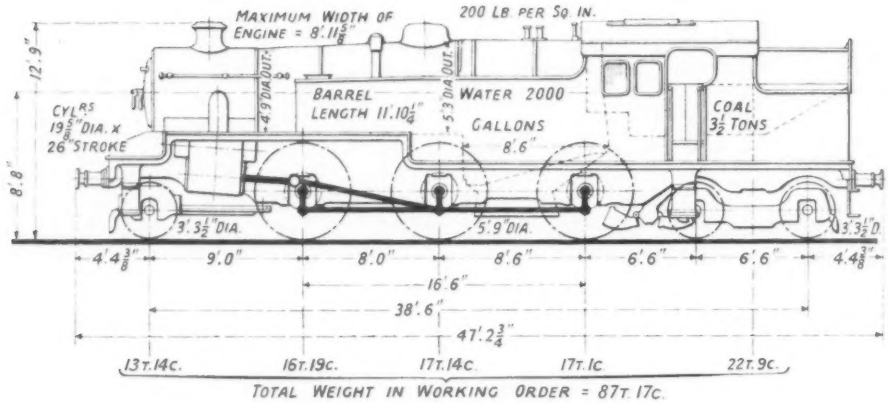
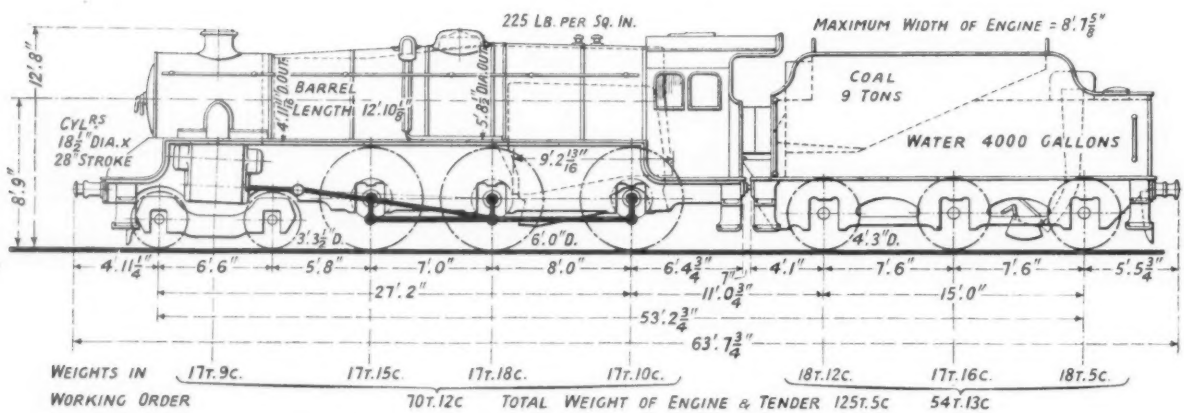



*Standard 2-cylinder 2-8-0 Class "8F" freight locomotive*




*Standard 2-cylinder 2-6-4 Class "4P" tank locomotive*




*Standard 2-cylinder 4-6-0 Class "5P5F" general utility locomotive*

*MODERN L.M.S.R. FREIGHT, TANK, AND MIXED TRAFFIC LOCOMOTIVES*

still not entirely independent of variations in running resistance, however, and in comparing results so obtained, due regard must be paid to composition of train, weather conditions, and nature of route traversed. The table on page 439 gives results of some dynamometer car tests on the L.M.S.R. Mr. Stanier later referred to the locomotive testing plant at Rugby, a joint enterprise of the L.M.S. and L.N.E. Railways, the completion of which has been interrupted by the war.

There are undoubted difficulties, he said, in the way of finding what goes on in a locomotive cylinder on the road. Indicator cards can be taken while running in service, but as the indicators have to be connected to the cylinders by long pipes to bring them into a position where they can be worked, and as the indicator drive has often to consist of long and slender rods for the same reason, distortions occur at high speed, and the indicated horse-power recorded ceases to correspond with the actual. Electrical indicators reading at a distance suitable for this purpose have not yet been perfected.

The subject of thermal efficiency was dealt with at some length in the address, because, as the author states, its importance is often misunderstood. It is true that fuel cost is only one of many operating costs, and that even a 20 per cent. saving in coal on an individual engine or a small class of engines does not represent very much in hard cash. For this reason, an almost defeatist view is sometimes taken that it is hardly worth trying to improve steam locomotive efficiency. It may be conceded that the production of one or two special locomotives may not have much immediate influence on a railway company's earnings; but as against this, if all the locomotives on the L.M.S.R. could be made to work at the efficiency of the best, provided it was feasible to make the necessary changes in design and in operating conditions, the saving would be of considerable magnitude and it would be a goal worth striving for.

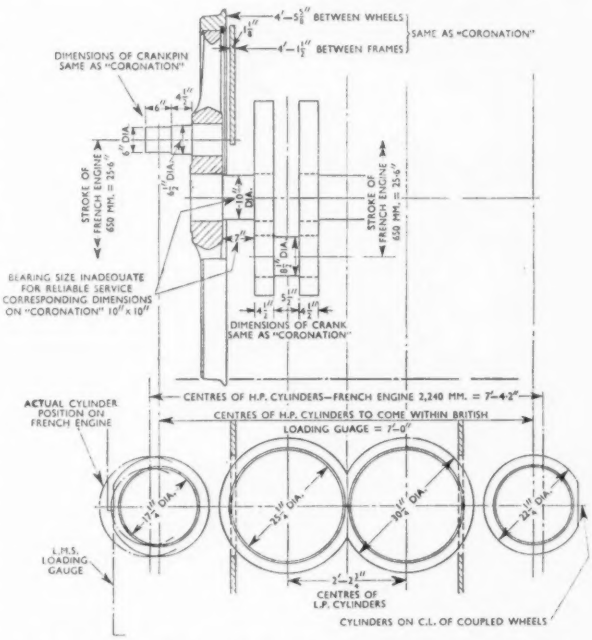
### Operating Efficiency

The locomotive is most efficient from an operating point of view when it combines maximum availability with minimum maintenance costs. In the first of these terms four conditions are included: (1) that the engine should be available for use, free from necessity for servicing, and without breakdown, for the greatest number of consecutive hours; (2) that the time required for the routine inspection and servicing, and the time spent in running repairs, should be a minimum; (3) that the engine should run the longest possible mileage between shop repairs; and (4) that the days spent under shop repair should be a minimum. Maintenance costs are dependent on each of the foregoing conditions. They are also affected by design, metallurgy, machine tools, and above all by organisation. A modern locomotive is capable of the following availability, provided traffic conditions permit:—

| | |
|---|---|
| (1) Hours of continuous running without taking on fuel | 8–10 |
| (2) Days of continuous working without shed examination or attention | 8 |
| (3) Hours required in shed for boiler washout, standard examinations, minor repairs | 18–24 |
| (4) Mileage between piston and valve examinations at sheds | 40,000–45,000 |
| (5) Hours required for examinations in item (4) | 24–48 |
| (6) Mileage before wheels and axle-box require attention: light repair | Average, 70,000<br>Individual cases, 100,000 |
| (7) Mileage before boiler requires major repair: heavy repair | Average 150,000<br>Individual cases, 250,000 |
| (8) Days in shops for heavy repair . . | 15 |

The number of days spent in shops has been more than halved in the last ten years, mainly as a result of two major steps in shop organisation. First, boiler design has been standardised and a sufficient stock of spare boilers provided, so that an engine under repair no longer has to wait for its own boiler to be put back. Second, repairs are organised in successive stages, bringing the engine to specialist men and specialist machines at each stage of the repair. As a result, only $4\frac{1}{2}$ per cent. of the 7,500 engines of the London Midland & Scottish Railway are unavailable at any one time, by reason of shop repairs.

The engineering section of the L.M.S.R. Research Department has carried out some interesting experiments utilising the cinematograph camera to obtain pictures of certain phenomena, and Mr. Stanier exhibited two films of them. The first illustrated an examination made to determine the contour of a carriage wheel which would prevent side oscillation caused by the wheel wandering from side to side on the top of the rail. A coach was fitted with a periscope and a light, near rail level, so that photographs of the flange of the wheel and the rail head could be taken when the coach was running. Tests were made with wheels turned to the standard tyre contour, coned to a taper of 1 in 20, and with varying contours including wheels with a cylindrical tread. Although the cylindrical wheels gave the best results, when the flange touched the rail it tended to stay there until running through points or round a curve moved it away. This


4'–5⅜" BETWEEN WHEELS
SAME AS "CORONATION"
4'–1½" BETWEEN FRAMES
DIMENSIONS OF CRANKPIN SAME AS "CORONATION"
STROKE OF FRENCH ENGINE 650 MM. = 25-6
BEARING SIZE INADEQUATE FOR RELIABLE SERVICE CORRESPONDING DIMENSIONS ON "CORONATION" 10" x 10"
DIMENSIONS OF CRANK SAME AS "CORONATION"
CENTRES OF H.P. CYLINDERS—FRENCH ENGINE 2,240 MM. = 7'–4·2"
CENTRES OF H.P. CYLINDERS TO COME WITHIN BRITISH LOADING GUAGE = 7'–0"
ACTUAL CYLINDER POSITION ON FRENCH ENGINE
L.M.S. LOADING GAUGE
CENTRES OF L.P. CYLINDERS
CYLINDERS ON C.L. OF COUPLED WHEELS

*Cylinders and bearings of representative 4-cylinder compound locomotive as applied to L M.S.R. Pacific type*

caused unnecessary flange wear. The result of the experiments was that a tyre contour with a cone of 1 in 100 was found to give the most satisfactory results, and was adopted for all main-line stock.

The second film illustrated the effect of different proportions of counterbalancing in locomotive driving wheels, and was taken to find the effect of hammer blow at high speed. Standard Class "5" 4-6-0 engines with 6-ft. driving wheels were run on a track which had been well greased so that the wheels could be run, by excessive slipping, to a speed representing 110 m.p.h. With the conventional proportion of reciprocating weight balance of 66 per cent., the wheels lifted from the rail over 2 in. When the rails were removed from the track they were found to be badly bent. When the reciprocating balance weight was only 30 per cent., there was no discernible lift when the wheels were revolving at high speed, but there was noticeable side-to-side movement in the rear coupled wheels. For various reasons 50 per cent. of the reciprocating masses have been balanced on this class of engine.

### Future Position

Mechanically, almost all the older types of engine are capable of being tuned up to some extent; and if opportunity is taken of the periodical complete renewal of major

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parts, then modifications to cylinders, valve events, and boilers need not be an expensive matter. Economically, however, the alterations may not be so easy to justify, and in this connection a simple example was cited.

Careful testing may indicate that an alteration costing £200 to each of 100 engines will save £50 per annum in coal for each engine. Accordingly the investment is authorised, the £20,000 is spent, and in due course the directors begin to enquire if the promised saving has been realised. Coal statistics on British railways are worked out on the basis of pounds per mile run, and if, as is often the case, there has been in the intervening period a considerable variation in traffic conditions, such as a revival in trade, calling for heavier train loadings, or a new timetable involving a general speed-up, these factors may increase the coal consumption per mile more than the locomotive improvement will reduce it. The net result is that there is no apparent saving, as shown by the usual statistics; and when this happens the effectiveness of test results are sometimes called in question.

The mileage by locomotives in railway operation thus becomes a vital factor, and this is limited partly by the engine's ability to attain a sufficient mileage per day, and partly by operating considerations allowing of that mileage being run. Each locomotive available for work on the L.M.S.R. is called upon to run an average of only 100 miles per day. This is not because 100 miles is the maximum distance a steam locomotive is capable of running—an example has already been cited of an 800-mile run in the day—but it is due to the fact that varying density of traffic on different lines, and fluctuations in demand between night and day, mid-week and week-end, make it difficult for rosters to be worked out which will enable the engines to run on the average more than this distance. It is clear, therefore, that for many turns of duty the time required by steam locomotives for examinations, washouts, etc., is not a limitation to the building up of mileage, since the mileage could not be provided anyway for traffic reasons—at any rate under present conditions. In such cases the normal steam locomotive, cheap in first cost, has not yet reached the limit of its exploitation. In the other cases, also numerous, where schedules call for, or can be made to call for more intensive working, the more expensive diesel or condensing steam units offer themselves for serious consideration, and are attractive in proportion as they are able to offer more continuous availability than the best normal steam engines. As complete electrification calls for still higher capital charges, a total recasting of schedules and rosters to promote intensive usage is necessary, and is invariably undertaken.

It is clear that the locomotive engineer of the future will have to range far outside the limits of his railway surroundings, and a wide knowledge and understanding of what is going on in other fields will be essential. For this purpose the work of the Institution is invaluable, and it is hoped that as the locomotive follows the marine engine and the power station into the field of scientific investigation, the Institution may be the medium through which the various forward steps will be recorded, criticised, and encouraged.

### Training of Engineers

Mr. Stanier devoted the last part of his address to a survey of the conditions of training necessary for those wishing to become mechanical engineers. There are, he said, at least three forms in which this training can be obtained.

"(1) Starting between the ages of 14 and 16, a boy can become a trade apprentice to fitting and turning, for five years. During this time, by attending evening classes at the local technical school, he can gain in succession the Ordinary and the Higher National Certificates in Mechanical Engineering. He may then have an opportunity to get some experience in a drawing office and, having made a start in professional engineering, rise to the top of the tree.

"(2) Having passed the School Certificate Examination and having matriculated, before he is eighteen, he may be accepted as an engineering apprentice. This will usually enable him to gain a rather wider practical experience than the trade apprentice. He will generally have apportunities to attend the technical school for one or two half-days a week on a regular engineering course and this, with the work he should do at evening classes, will enable him to obtain the Ordinary and Higher National Certificates. At the age of twenty-one, he should be qualified to go into a drawing office for the experience which he will need before he can be offered an executive position in engineering, and he will have had the chance of a sound practical and theoretical training.

"(3) After having obtained an engineering degree at a University, and having taken the opportunity of spending his long vacations in an engineering works, he should go to a works for two or three years' pupilage. The disadvantage is that he does not become part of the works organisation, and consequently his practical training is limited and he may feel handicapped in the early stages of his career.

"As a trade apprentice or an engineering apprentice, the boy should obtain a sound practical training, and may receive a good technical training. As a pupil, the boy should have had a wide technical training, and may obtain sufficient practical training to enable him to hold his own in the earlier years of responsibility. To a certain extent it depends on his own inclination. If he realises that a mechanical engineer should have a good knowledge of how tools can be used, he will take every opportunity of using them himself, whether they are hand tools or machines. He should resist the tendency to stand by and watch, making notes of the methods employed, but not actually doing the work himself.

"The more personal knowledge he gets of the fundamental requirements and mental processes of a craftsman, the better he will appreciate the craftsman's difficulties. Such an understanding will make him more fitted to be a leader, and he will have and give greater confidence when he obtains a position of responsibility.

"In my opinion, a good practical mechanic will always be able to earn a livelihood, but, however good a technical training a boy gets, without being grounded on the fundamentals of his practical training, he is handicapped, particularly in his earlier years. If a parent can arrange it, I advise that, after a boy has passed his School Certificate with the credits necessary to matriculate, he should have at least a year, preferably two, in the shops as an engineering apprentice, attending the necessary classes at the technical school where he will probably gain the Ordinary National Certificate in the latter time. If he can then go on to the University and graduate, he is a fortunate boy. After obtaining his degree he should go as a pupil for twelve months to a work specialising in the particular branch of mechanical engineering in which he is interested.

"Mechanical engineering covers such a wide field that there is room for all grades of training, but this scheme will give a wider outlook and a more complete start for the young engineer than most of the others. Provided that the works in which the boy starts has a section for detail shop training for the first year of apprenticeship, such as I have seen on the Continent and in some progressive works here (generally called the Apprentice Bay), the balance between the practical and theoretical sides will be ideal, and it is up to the boy to make good.

"I have been fortunate, inasmuch as I have always had a good staff to work with, and anything I have been able to do in furthering the interests of the finest and most interesting profession in the world has been due to their loyal co-operation and help."

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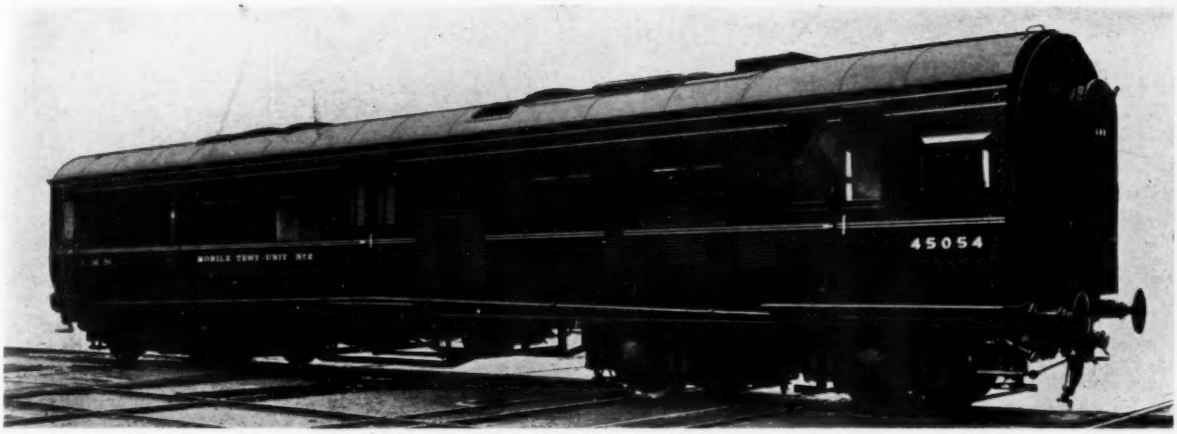
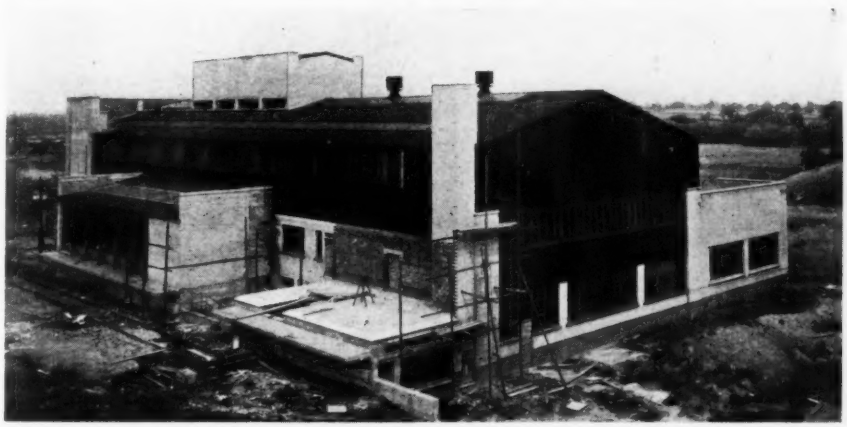
MOZAMBIQUE GOVERNMENT RAILWAYS PURCHASES.—The only equipment purchased in 1940 by the one State railway in Portuguese East Africa, operated by the Administration of Ports & Railways of the Colony of Mozambique, consisted of 14 road motor lorries and 6 trailers. The rolling stock in use at the end of 1940 comprised 79 steam locomotives, 60 passenger cars, 1,472 freight cars, 12 motor trains, 32 tank cars, 3 buses, 105 lorries, and 26 trailers. U.S.A. exports of equipment to Mozambique in 1940 consisted of:—

| | Number | Value |
|---|---|---|
| Electric locomotives | 1 | $5,082 |
| Diesel and diesel-electric locomotives | 1 | 3,956 |
| Locomotive parts and accessories | — | 9,004 |
| Carriage parts | — | 1,879 |
| Railway signals and equipment | — | 213 |
| Total | 2 | 20,134 |



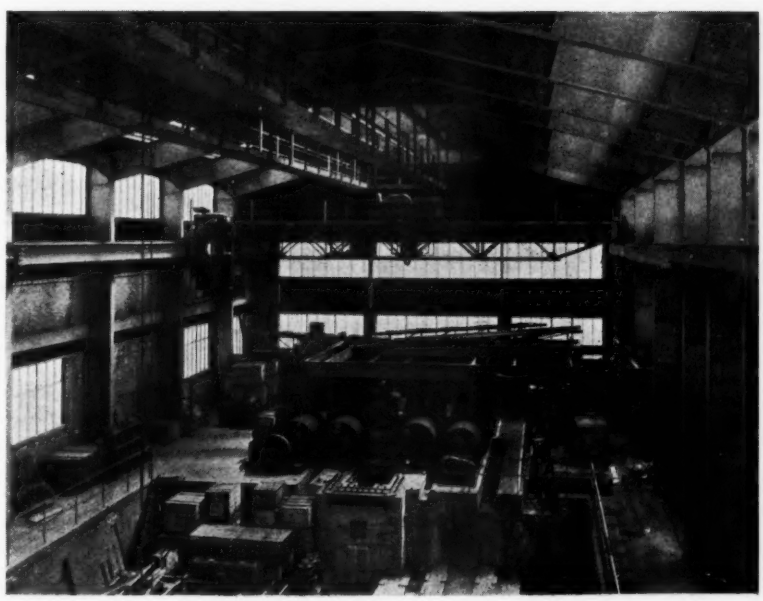

*Mobile testing unit using electric braking, L.M.S.R.*



*New locomotive testing station at Rugby for the L.M.S.R. and the L.N.E.R. in course of construction. Left: exterior view, and, below: the interior with some of the machinery awaiting installation*

## The Locomotive in Mechanical Engineering

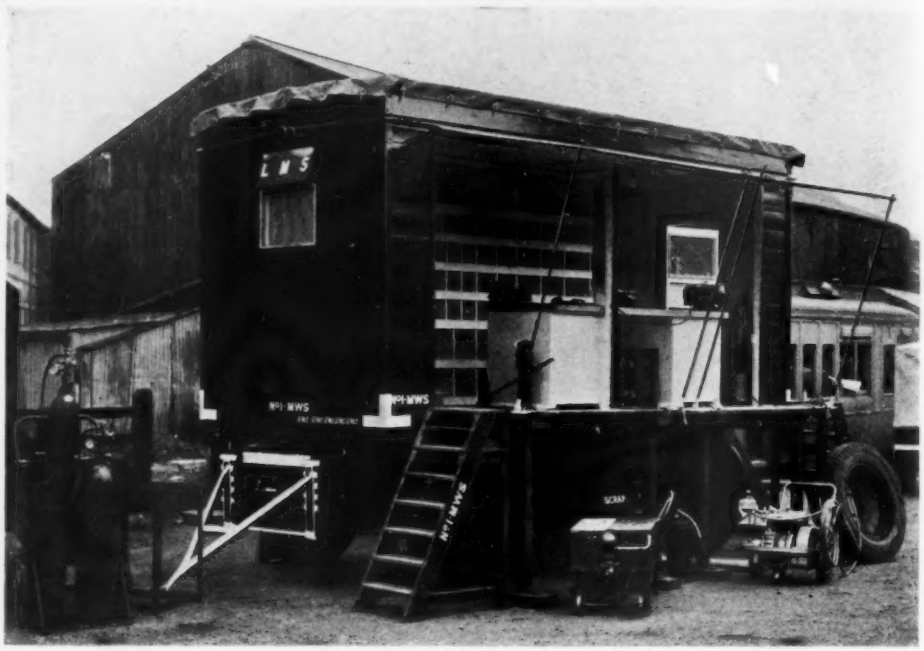
(*See article on pages* 439-444)



# L.M.S.R. Mobile Repair Column

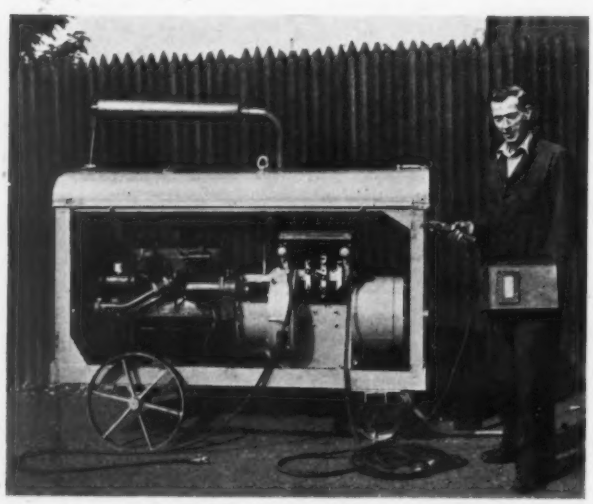
***Comprehensive equipment to ensure that repair facilities are available in emergency conditions, and at short notice***

THE maintenance of collection and delivery services, particularly in areas which have been subjected to air attack, is a vital part of the rail transport organisation of the country and, to ensure that repair facilities shall be available under emergency conditions and at the shortest possible notice for its fleet of road motor vehicles, the London Midland & Scottish Railway has constructed at its Wolverton works a mobile repair column. Its equipment ensures that the maximum number of damaged vehicles shall be returned to the road in the shortest possible time and, even where road motor repair shops themselves escape damage, the addition of a mobile repair column, by increasing the capacity of the shops, can secure a return to normality in a very much shorter space of time than would otherwise be possible.




*General view of the first L.M.S.R. mobile workshop*

The mobile workshop forming one of the units in the repair column is arranged in a trailer vehicle specially designed and equipped for the repair and maintenance of road motor vehicles in the event of damage to existing workshops, and to assist in the maintenance of the vehicles and other railway equipment which may have to be carried out in areas remote from road motor workshops. The whole of the equipment was exhibited on September 25 at Euston station and provided an impressive demonstration of one of the many wartime activities of the L.M.S.R. Motor Engineer's Department.



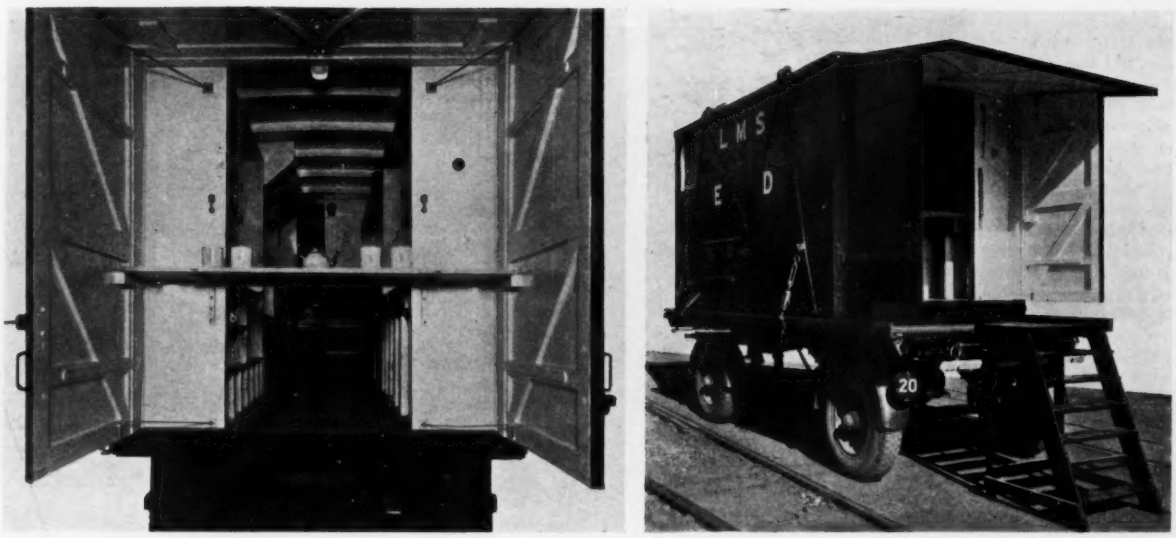
*Portable electric welding plant*

### Details of Equipment

The equipment of the mobile workshop is comprehensive, and includes an electric generating set to provide current, independent of local supplies, for lighting the workshop, to drive workshop tools, and for charging electric batteries; a tyre inflator with its own power unit; a portable oxy-acetylene welding plant; tanks for cleaning parts and for collecting used oil; a fitters' bench and hand tools; and accommodation for spare parts, tyres, and timber for body repairs. When in use, the vehicle is jacked up and held on wooden chocks, to relieve pressure on the pneumatic tyres. After the completion of tests in service of this experimental mobile workshop (classified as No. 1. MWS), it is hoped to construct further units.

Reclamation of worn parts of motor vehicles has necessitated increasing the facilities for doing the work in the road motor shops, and the requirements in the London road motor district have been met by the provision of a mobile petrol-engine-driven electric arc-welding generator of 12/300 amps. capacity. The mobility of the self-contained unit enables it to be employed at any of the road motor shops, and overcomes the difficulties of varying electric supply services. The equipment, which was obtained on the advice of the Chief Mechanical Engineer's welding school at Derby, was manufactured by Petbow Limited, Watford.

Four mobile canteens have also been constructed at the L.M.S.R. Wolverton carriage works. They are capable of being used either on a rail carriage truck or on a 4-wheel road trailer—in the latter case they are hauled by a goods




*Container type mobile canteen ; (left) the interior arrangements, and (right) the canteen on a road trailer*

motor or tractor; the canteen is secured to the carrying vehicle by screwed shackles. The alternative means of transport enable the canteen to be taken easily to the required point by whatever combination of road or rail is most convenient. The interior is equipped with storage batteries for lighting, a coal burning stove, facilities for washing up, storage accommodation for food, crockery, and cutlery, and the necessary urns and serving counter. In addition, a mobile road canteen vehicle has been built on a Commer 1-ton chassis. The roof of the vehicle has been raised, doors and weather shield fitted at rear, and a water tank fitted over the driver's cab. The interior is equipped with a coal burning stove, washing up facilities, storage accommodation for food, crockery, and cutlery, and urns and serving counter. The vehicle is based on Euston and garaged in the road motor depot.

# Gas Vehicles on the L.M.S.R.

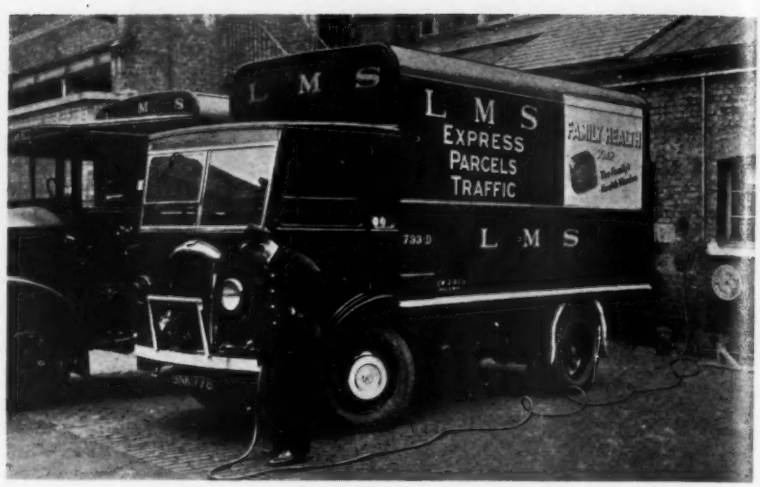
## *Various uses, both in experimental and normal service, of producer gas and low-pressure town gas*

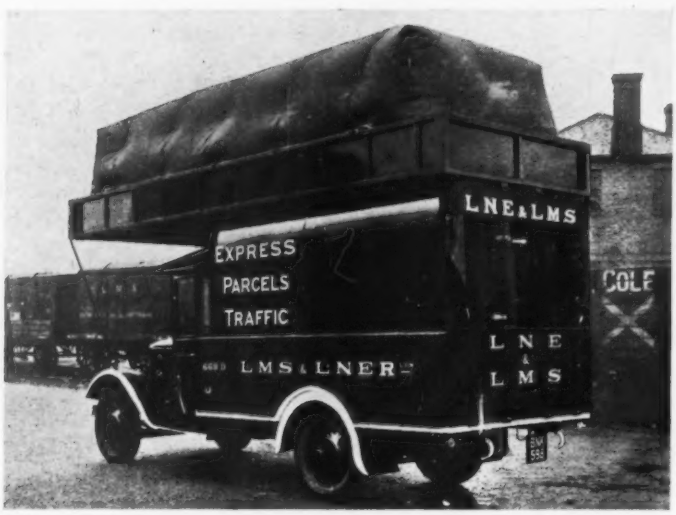
UNDER the direction of Mr. J. Shearman, Road Transport Superintendent, the L.M.S.R. has been making numerous trials on both experimental and regular service runs with low-pressure town gas and producer gas. Two vehicles fitted with simple gas producers of the Ministry of Mines and similar types have between them covered 42,000 miles in revenue service, and a nucleus of men has been trained in their operation, so that if a change-over to producer-gas operation had to be made on a large scale in a short time the solution of the driving problem would be one step along the way. In the two L.M.S.R. lorries the producers are in rather unusual positions; the 2-ton Dennis vehicle has a small Mark II producer supported by the chassis and dumb iron at each side of the bonnet, but the second vehicle of the same type has a Ministry of Mines plant which is place just behind the cab, with the body floor and frame cut away to clear it.

*Two-ton Dennis in L.M.S.R. service, fitted with Mark II gas producer*

The use of town gas was developed first along normal lines by fitting light parcels vans with gas bags on the roof, and then extending the principle to four-seat motorcars using a two-wheel trailer to carry the gas bag. The third stage is the provision of gas starting equipment at various depots. In cold weather vehicles can be started up easily on town gas, and actually the engine is warmed through more rapidly with town

gas than with petrol. A flexible pipe carries the gas from the mains to the special gas carburettor on the engine induction pipe. Some of the repair shops are also equipped with a supply of gas for use in the initial running-in of engines after they have been overhauled. This, besides facilitating the running-in, effects quite a useful saving in petrol. The gas-starting method, combined with the use of gas for running-in purposes, save an amount of petrol which in the long run may become quite important in an organisation with a large number of vehicles.




*Above: One of the L.M.S.R. vans for local collection and delivery work being started up on domestic gas, with which the engine is warmed through more rapidly than with petrol*

*Left: Joint L.M.S.R. and L.N.E.R. 1½-ton Morris parcels van fitted with gas bag on the roof*

## An Unusual Transport task in New Zealand

*An Amazon class 6-ton cross-country vehicle of the Southland Carrying Co. Ltd., of Invercargill, South Island, New Zealand, moving a complete house from one site to another. The same company undertook to remove the garage on a 4-ton four-wheel platform lorry, also built by John I. Thornycroft & Co. Ltd.*

# Notable Wartime Road Vehicle Overhaul

***Co-operation between the London Midland & Scottish Railway Company and Karrier Motors Limited has resulted in an arrangement for facilities for the repair of L.M.S.R. road vehicles at the London Service Station of Karrier Motors***

A NOTEWORTHY example of co-operation between the Road Motor Engineer's Department of one of the main-line railway companies and the manufacturer of many of its vehicles is provided by arrangements entered into some time ago between the Road Motor Engineer's Department of the L.M.S.R. and Karrier Motors Limited. In present circumstances it is very difficult indeed to obtain delivery of new motor vehicles for civil purposes, even on the part of the main-line railway companies which are, of course, controlled establishments under the Minister of War Transport and are engaged on work of national importance.

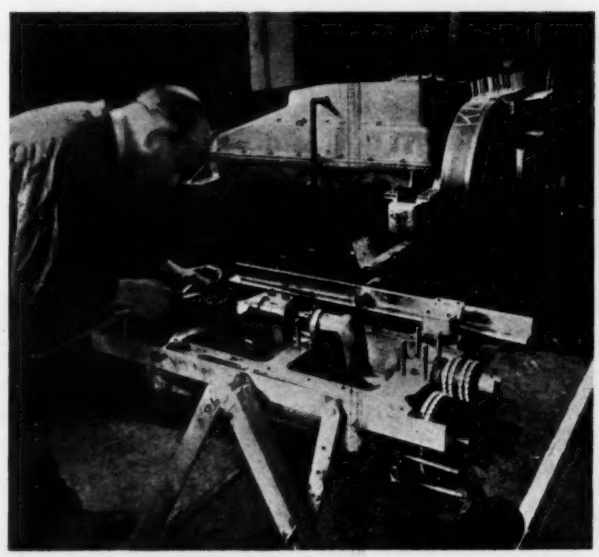
The cost of reconditioning has worked out at a very favourable figure which is a tribute both to the sturdiness of the original design and construction and also to the railway maintenance. Of the 60 vehicles which have been handled so far, most of the cylinder blocks have been recovered by resleeving; gears have mostly had to be renewed, road springs set up, and clutches relined. Radiators have been tested by hydraulic pressure, and then stripped. Wherever possible, material has been salvaged, and built up by welding, fescolising, and metal spraying. Some of the vehicles arrived at the works with oil lamps, but, in accordance with current L.M.S.R.

*A line of vehicles awaiting overhaul at the Karrier London Service Station*

Spare parts also are by no means easy to secure, especially for vehicles of types no longer manufactured, and the Government deprecates the manufacture of obsolete spare parts.

About a year ago Mr. J. Shearman, Road Motor Engineer L.M.S.R., decided to retain in service a large number of Karrier vehicles of between 11 and 13 years old which it would under normal conditions have been economical to replace by new ones. Each machine required overhaul, and as the stock of spare parts possessed by the L.M.S.R. and the overhaul facilities at present available to the railway company were insufficient to undertake the work, the assistance of Karrier Motors Limited, the builder of these vehicles was sought. Although heavily committed with work of national importance, that company found that it could undertake the task at its London Service Station by using a comparatively small percentage of works area and production staff. Moreover, Karrier Motors Limited had in stock most of the spare parts required, leaving very few to be made, especially as the L.M.S.R. was able to contribute some spares, and also several of the worst vehicles were scrapped to provide units which were difficult to obtain.

In all 93 vehicles are being reconstructed, of which 60 have already passed through these shops during the past 11 months. They are of five different types, with pay-load capacities ranging from 30 cwt. to 10 tons. The types, with date of build in parentheses, are as follow: CY (1928); ZA (1929); GH5 (1929); TT, 10 ton tractor-trailer (1929) and KW6, 6-wheeler (1929).



*A stage in the process of renewing worn parts*

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practice, they have been fitted with electric lighting systems provided by the railway company; the renewal cost therefore includes only the installation labour. Karrier Motors Limited has undertaken the work on the engine and chassis only, the L.M.S.R. handling the bodywork at its Wolverton carriage shops.

Throughout the job there has been close co-operation between builder and operator. Mr. Shearman's inspector makes weekly visits to the works—a practice that has proved particularly helpful in securing rapid decisions and avoiding unnecessary correspondence. A special inspection schedule has been prepared in order to obviate oversights in handling vehicles of types no longer familiar to the workmen. A large percentage of semi-skilled labour is being employed, in accordance with the Government request to use, where possible, men taken on after having had a 13-week Ministry of Labour course. The work has been accepted by the Ministry as too heavy for female labour.

We are indebted to Karrier Motors Limited for facilities in visiting its London Service Station to see the work in progress.

*A chassis leaves the works after overhaul*

## S.R. Locomotive named "Royal Mail"

(*See article on page* 457)

*Left: The ceremony at Waterloo Station, when Lord Essendon, Chairman of Royal Mail Lines Limited, named the new "Merchant Navy" class locomotive "Royal Mail"*

*Right: Lord Essendon (driver) with Mr. Robert Holland-Martin, Chairman, and Mr. E. J. Missenden, General Manager, S.R.*

# RAILWAY NEWS SECTION

## PERSONAL

The Ministry of Supply announces the appointment of Major H. M. Lawrence, R.E., as Director of Traffic Requirements for the Ministry of Works & Buildings, whose transportation the Ministry of Supply directs. Before the war Major Lawrence was Transport Manager of the Gas Light & Coke Company.

G.W.R. APPOINTMENTS

The directors have authorised the following :—

Mr. H. Bolton, to be District Goods Manager, Gloucester, from November 1, *vice* Mr. L. J. A. Callaway, retiring.

Mr. W. J. Pepler to be Divisional Superintendent, Exeter, from January 1, 1942, *vice* Mr. R. W. Higgins, retiring.

Mr. George Chester, Secretary of the National Union of Boot & Shoe Operatives, has been appointed Secretary of the British Iron & Steel Trades Association in succession to Mr. John Brown, who has resigned.

THE INSTITUTE OF TRANSPORT

*Election to Membership*

Sir K. G. Mitchell, C.I.E., Consulting Engineer to the Government of India (Roads).

*Elections to Associate Membership*

Mr. W. H. Brassington, L.M.S.R.

Mr. L. Dawson, Cheshire Lines Committee.

Mr. E. H. Thomas, G.W.R.

Mr. H. G. Duncan, General Manager, Nyasaland Railways, retired on July 31 last. Mr. Duncan was from 1921 to 1924 Deputy Traffic Manager of the Bengal-Nagpur Railway. He joined the Shire Highlands Railway, which early in 1931 was acquired by Nyasaland Railways Limited, as Deputy General Manager. Mr. Duncan became General Manager in 1927.

Mr. T. Loudon, Stationmaster, Greenock, L.M.S.R., has been appointed Stationmaster at Aberdeen joint station in succession to Mr. John Davidson who, as recorded in our September 26 issue, has been awarded the M.V.O. by H.M. The King on his retirement.

We regret to record the death on October 16 of the Rt. Hon. William Henry Fitzpatrick Watson-Armstrong, first Baron Armstrong of Bamburgh & Craigside. Lord Armstrong was a grand-nephew of the founder of Armstrong-Whitworths, and was for many years a Director of the North Sunderland Light Railway.

At a board meeting of the directors of the Canadian Pacific Railway Company held in Montreal on October 15, Mr. Morris W. Wilson and Mr. L. J. Belnap, Directors, were appointed Members of the Executive Committee of the board to fill the vacancies caused by the deaths of Sir Herbert S. Holt and the Rt. Hon. Arthur B. Purvis, P.C., recorded in our issues of October 17 and August 29.

Mr. W. A. Stanier, M.I.Mech.E. M.I.Loco.E., has, as announced in an editorial article on page 432, been elected President of the Institution of Mechanical Engineers. Mr. Stanier is the son of the late Mr. W. H. Stanier, Chief Stores Superintendent, G.W.R., and was born in 1876. He was educated at Wycliffe College, Stonehouse, and entered the Swindon works of the G.W.R.

*Mr. W. A. Stanier*

Chief Mechanical Engineer, L.M.S.R.
President of the Institution of Mechanical Engineers, 1941-1942

as an apprentice in 1892. After serving his apprenticeship he became a draughtsman, and in 1900 was appointed Inspector of Materials ; the next year he was transferred to the Running Department as Technical Inspector at Swindon running shed. Early in 1903 Mr. Stanier was promoted to be Assistant Divisional Superintendent, Swindon, and a year later was transferred to Paddington in a similar capacity. In 1906 he returned to Swindon as Divisional Locomotive Superintendent, a position he held for six years. At the beginning of 1913 he was appointed Assistant Locomotive Works Manager at Swindon, and was promoted to be Works Manager in 1920. Two years later he was appointed Works Assistant to the Chief Mechanical Engineer, and in 1923 became Principal Assistant to the C.M.E. It was in 1931 that Mr. Stanier was offered and accepted the appointment—as from January 1, 1932—of Chief Mechanical Engineer of the L.M.S.R. at Euston. In the autumn of 1936 he was appointed by the Government of India as a member of the (Wedgwood) committee of inquiry into the position of the Government-owned railways in that country ; he returned from India in the spring of 1937. Mr. Stanier was appointed a Member of the Government of India committee of inquiry into the design and purchase of Pacific locomotives in July, 1938. He is a Member of Council and has been a Vice-President of the Institution of Mechanical Engineers, and was elected President for the 1941-1942 session last March. He was President of the Institution of Locomotive Engineers for the 1938-39 session. In July, 1939, he was elected a Member of the Permanent Commission of the International Railway Congress Association.

We regret to record the death, on August 24 at Toronto, of Mr. R. F. Uniacke, 83, former Chief Engineer, Canadian Board of Railway Commissioners.

Mr. H. B. Beaumont has been appointed Acting Steamship Passenger Traffic Manager, C.P.R., *vice* Mr. Wm. Baird, whose services have been loaned to the Canadian organisation of the Ministry of War Transport.

Mr. G. C. Dew, General Foreign Freight Agent, Canadian Pacific Railway, has been appointed Foreign Freight Traffic Manager, *vice* Mr. W. M. Kirkpatrick, whose services have been loaned to the Canadian organisation of the Ministry of War Transport of the United Kingdom.

Mr. Timothy J. Healey, Chief Special Agent, Illinois Central System, has retired after 40 years of service. He is succeeded by Mr. George F. Doyle, Assistant Chief Special Agent.

Mr. A. C. Clarke, Assistant Chief Engineer, Baltimore & Ohio Railroad, was on July 17 appointed Chief Engineer in succession to the late Mr. H. A. Lane.

Mr. J. J. M. Hendry, Chief Rates Officer in the office of the General Manager of the South African Railways & Harbours, has retired after more than 39 years of service. Mr. Hendry, who was born on July 29, 1881, began his railway career at the age of 20 when he joined the old Imperial Military Railways as a clerk. Subsequently he was transferred to Kazerne and the Chief Traffic Manager's Office in Johannesburg and shortly before Union he was transferred to the Claims Section of the Assistant General Manager's Office, where he remained for several years and rose to the position of Assistant Superintendent. In September, 1921, Mr. Hendry was transferred to the Rates Section and two years later was appointed Rates Assistant in the General Manager's Office. He was made General (Claims & Rates) Assistant in 1930 and in August, 1936, was appointed Chief Rates Officer. During his period of service, Mr.

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Hendry has served on various commissions, the most important of which were the Departmental Tariffs Inquiry Commission of 1930, the Base Minerals Industry Commission of 1939, and the Rural Industries Commission of 1939-40, of which he was Chairman. In addition, Mr. Hendry has for many years been closely associated with the negotiations connected with the Mozambique Convention.

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Lt.-Colonel E. C. Cookson, A.C.G.I., B.Sc.(Eng.), A.M.Inst.C.E., Divisional Engineer, Newport, G.W.R., has, as recorded in our October 10 issue, been appointed Assistant to the Chief Engineer, Paddington. Mr. Cookson was educated at St. Paul's School, West Kensington, and afterwards at the City & Guilds Engineering College of the Imperial College of Science and Technology, South Kensington, where he graduated as

*Lt.-Colonel E. C. Cookson*

Appointed Assistant to Chief Engineer, Paddington, G.W.R.

an Associate of the City & Guilds of London Institute and B.Sc.(Eng.). In 1927-28 he was awarded a Miller prize by the Institution of Civil Engineers for a paper on the reconstruction of Paddington goods station. Mr. Cookson entered the service of the Great Western Railway Company in September, 1923, in the New Works Department of the Chief Engineer's Office, and was engaged in the preparation of drawings in connection with various important works. Later he became Assistant Resident Engineer on constructional works at Newport goods and passenger stations, Cardiff Queen Street and Bute Road stations, Swansea High Street station, Briton Ferry hump yard, etc. In 1925 he joined the staff of the Divisional Engineer at Gloucester and in 1926 returned to the New Works Department at Paddington. In February, 1929, he was appointed Assistant to the Divisional Engineer, Shrewsbury, and under him was responsible for the Morpeth goods depot alterations at Birkenhead. In July, 1933, he was appointed Assistant Divisional Engineer at Plymouth and in January, 1935, was made Assistant Divisional Engineer, London Division, and became Divisional Engineer, Newport, in February, 1940. On the formation of the Transportation Units, Royal Engineers Supplementary Reserve, in 1925, Mr. Cookson was given a Commission in a Railway Construction Company, Royal Engineers. He was mobilised on September 1, 1939, in command of a Railway Construction Company, R.E., subsequently commanding a Railway Construction & Maintenance Group, R.E., with the rank of Lieutenant-Colonel. He was mentioned in Despatches and on return from service overseas with the B.E.F. was released from the Army for Special Duties in the Chief Engineer's Office, where he is now appointed Assistant to the Chief Engineer.

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Mr. Robert Burgoyne, who, as recorded in our October 10 issue, has been appointed Assistant Chief Staff & Establishment Officer, Great Western Railway, entered the service of the company in December, 1906, in the office of the

*Mr. Robert Burgoyne*

Appointed Assistant Chief Staff & Establishment Officer, G.W.R.

Superintendent of Works at West Ealing. In March, 1908, he was transferred to the Chief Engineer's Office at Paddington and five years later to the General Manager's Office. He joined H.M. Forces early in 1915 and served with the B.E.F. in France for three years. Upon returning to the railway at the end of 1918, Mr. Burgoyne was attached to the staff section of the General Manager's Office, and became head of the section in 1936. Mr. Burgoyne has been closely associated with the work of the Sectional Councils of the G.W.R. since their establishment under the Railways Act, 1921, and in 1929 was appointed Secretary of the company's side of four of the councils, namely, those dealing with staff questions affecting operating grades. In 1934 he also took over similar duty in connection with the Sectional Council for Clerical & Supervisory Staff, and continued to act as Secretary of the company's side of all the councils until 1937. He is a member of the Railway Staff National Council and the Railway Shopmen's National Council.

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Mr. G. B. Barton, M.Inst.C.E., who, as recorded in our October 17 issue, has been appointed Assistant Engineer, Southern Area, L.N.E.R., began his engineering training under the late Mr. R. Pawley, then Engineer to the Hull & Barnsley Railway, and was later engaged on the maintenance of that line and the construction of new railways in South Yorkshire. From 1906 to 1910 he was employed on the construction of the King George Dock at Hull, a work carried out jointly by the North Eastern and the Hull & Barnsley Railway Companies. He was later appointed Resident Engineer on Joint Lines, which were being constructed in the Doncaster area by the Great Central and the Hull & Barnsley Railways. In 1917 he was in charge of one of the Civilian Railway Companies sent to France for railway maintenance work. There he received a commission in the Royal Engineers and was sent to Palestine, where he was engaged on the Palestine Military Railways, and eventually became Assistant Maintenance Engineer for the various lines. He retired from the Army in June, 1919, with the rank of Captain. Mr. Barton returned to the

*Mr. G. B. Barton*

Appointed Assistant Engineer (Southern Area), L.N.E.R.

Hull & Barnsley Railway, and was later appointed District Engineer, which position he held when the railway was amalgamated with the North Eastern Railway. In 1924 he was transferred to the position of District Engineer, Boston, and remained there until January, 1937, when he was appointed Assistant to the Engineer (Maintenance), Southern Area, and he is combining the duties of Maintenance Engineer with the additional responsibilities of his new position of Assistant Engineer, Southern Area. In October, 1937, Mr. Barton was appointed Major in the Engineer & Railway Staff Corps, Royal Engineers (Territorial Army).

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Mr. Harry Clifford Clifford-Turner, whose death we recorded in our July 4 issue, left estate valued at £232,686 (net £136,229). Mr. Clifford-Turner, who was a well-known London solicitor, was associated with the formation of the London Public Omnibus Co. Ltd. and was concerned with other London bus enterprises absorbed by the London General Omnibus Co. Ltd. and the London Passenger Transport Board.

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We regret to record the death on August 11 of Mr. M. Carter Hall, General Solicitor since 1938 of the Chesapeake & Ohio Railway; the New York, Chicago & St. Louis Railroad; and the Pere Marquette Railway.

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# TRANSPORT SERVICES AND THE WAR—113

*Railway personnel casualties from enemy action—Overcoming peak hour travel—The Sino-Russian Road—Burma Road traffic—U.S.A. army and civilian movement by rail—European transport services*

The part British railwaymen have played in maintaining services during enemy attacks on this country has been mentioned on more than one occasion in these columns. It can now be revealed that 280 railwaymen have lost their lives and 1,500 have been injured by enemy action while carrying out their railway duties. More than 100 members of the staff of the railways have been decorated by the King.

### First and Third Class on the Southern Railway

Apart from the curtailment of first class facilities in the London area, all trains between Petersfield and Midhurst, Southern Railway, are third class only from October 6.

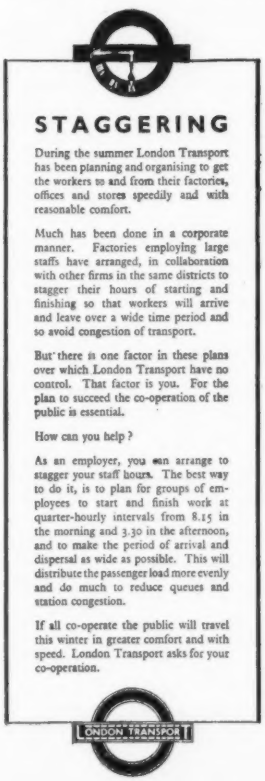
In the London area all trains between Waterloo and Weybridge *via* Surbiton, and all trains between Horsham and London *via* Three Bridges, continue to have first class compartments, but only some trains between Horsham and London *via* Dorking retain the first class coaches. As we have previously indicated, many other parts of the Southern Railway suburban system are served by main-line trains which retain first class carriages.

### Staggering Hours of Travel

On a number of occasions recently we have referred to the endeavours which are being made by passenger transport services in many parts of the country to cope with peak movements of workers. Various expedients have been adopted, but there is a wide measure of agreement that the solution must ultimately be found in spreading the times during which the greatest number of persons travel to and from their employment. In the London area the London Passenger Transport Board has inserted a series of advertisements in the daily press urging employers to stagger staff hours, and pointing out that the best way to do this is to plan for groups of employees to start and finish work at quarter-hour intervals from 8.15 in the morning till 3.30 in the afternoon, and to make the period of arrival and dispersal as wide apart as possible. We reproduce a typical announcement by the London Passenger Transport Board. In the provinces similar steps have been taken, notably by the Birmingham & Midland Motor Omnibus Co. Ltd. which, in addition to making its appeal, has suggested that an endeavour should be made to ensure that shop assistants and clerical staffs do not travel at the same time as munition workers, and recommends that the leaving hours of clerical staffs should be from 4-4.30 p.m., of employees in shops and stores and so forth from 4.30-5 p.m., and of works operatives from 5-7 p.m.

TRAIN SERVICE ALTERATIONS
ON AND AFTER
OCTOBER 6
METROPOLITAN LINE weekdays
Hammersmith trains will run to and from Barking during rush hours, at other times to and from Whitechapel
Uxbridge trains will terminate at the City during rush hours
MET. & G.C. JOINT LINE weekdays
After 7.30 p.m. certain trains will proceed to Croxley Green and Watford via Rickmansworth, providing a 20 minute service
For details of alterations see new timetable - PRICE 2d at the ticket office

*Poster announcement of alterations to Metropolitan Line services*


STAGGERING
During the summer London Transport has been planning and organising to get the workers to and from their factories, offices and stores speedily and with reasonable comfort.
Much has been done in a corporate manner. Factories employing large staffs have arranged, in collaboration with other firms in the same districts to stagger their hours of starting and finishing so that workers will arrive and leave over a wide time period and so avoid congestion of transport.
But there is one factor in these plans over which London Transport have no control. That factor is you. For the plan to succeed the co-operation of the public is essential.
How can you help ?
As an employer, you can arrange to stagger your staff hours. The best way to do it, is to plan for groups of employees to start and finish work at quarter-hourly intervals from 8.15 in the morning and 3.30 in the afternoon, and to make the period of arrival and dispersal as wide as possible. This will distribute the passenger load more evenly and do much to reduce queues and station congestion.
If all co-operate the public will travel this winter in greater comfort and with speed. London Transport asks for your co-operation.
LONDON TRANSPORT

Travel only when you must
Leave Weekend trips to the Tanks
British Railways are busiest at the weekend transporting tanks and guns and food, and coal.
Help to keep the Nation's life lines clear for these vital supplies by avoiding weekend rail journeys.
BRITISH RAILWAYS
GWR LMS LNER SR

*Two new newspaper advertisements*

### Fuel Rationing and Horse Feed

The Ministry of Food has announced that the next horse-feed rationing period begins on November 1. Normally rationed feeding stuffs will be allowed only for horses engaged in essential transport work, but the owner of a carriage horse may be granted a small ration if he can show that neither he nor any member of his household will have a licensed motorcar during the rationed period. He will thus be placed in the same position as the motorcar owner who receives a small basic ration of petrol.

### Motor Vehicle Repairs and Spare Parts

The Ministry of Supply and the Ministry of War Transport have had under consideration the report of the Motor Vehicle Maintenance Advisory Committee, of which Mr. W. E. Rootes was Chairman, and on most of the recommendations they have already taken appropriate action. The following are some of the principal recommendations which were made by the committee and the action which has been taken to give effect to them.

Manufacturers and distributors should be asked to prevent the hoarding of spare parts by rationing their customers. As a means to this end a scheme has been prepared to ensure that no spare parts in short supply are obtainable except for vehicles immobilised or likely to be immobilised for want of these parts. Hoarded stocks will be requisitioned. The building of non-standard vehicles out of used parts collected

from various vehicles and out of new spare parts should be stopped as tending to use spare parts wastefully, to throw supplies out of balance and to lead to the construction of unsafe vehicles. The co-operation of manufacturers and distributors of spare parts has been enlisted. Following the committee's recommendation the Ministry of Supply in co-operation with the Ministry of War Transport are arranging that all suitable worn parts are returned to manufacturers for re-conditioning when new or re-conditioned parts are issued.

An adequate force of motor mechanics should be retained in the repair shops of the country both for vital civilian work and for repairs to some part of the Army's mechanised equipment. The Ministry of War Transport is acting to ensure a sufficiency of this type of labour. Measures should be taken to promote the training of men, women and boys as motor mechanics both in Ministry of Labour training establishments and within the repairing industry itself. In accordance with the committee's recommendations, the training department of the Ministry of Labour are making rapid progress with their own schemes of training and have started a three to four months course open to boys, men, and women. These courses are not designed to give a specialised training, but will provide trainees with a background sufficient to make them useful mechanics in repair shops. The Ministry is also discussing with the industry the development of training in the repair shops of the country. The repair staffs at the Ministries of War Transport and Supply should be strengthened and repair facilities should be surveyed by the Ministry of War Transport. This survey is progressing and appointments of further repair staff have been made at both Ministries, including that of Mr. F. G. Smith as Adviser on Repairs.

Attention was called by the committee to the need for ensuring an adequate supply of new spare parts and also for producing sufficient new commercial vehicles both to meet present shortages and to replace those vehicles whose age renders their continued use uneconomic. Action to meet these requirements is being taken but the Ministry of Supply points out that production is bound to be limited by the increasing demands, such as for tanks, which are being made on the country's productive resources.

Other recommendations upon which action is being taken include the release of Army spare parts for civilian use in cases of vital need; the addition of all spare parts to the list of "essential traffics" on the railways; and measures for accelerating the procedure for dealing with claims for compensation for premises and plant of road transport undertakings and motor vehicle repair shops, damaged by enemy action.

### The Sino-Russian Road

The Free-Chinese Government in Chungking is still entirely dependent for its military and other imported supplies upon two roads, the Burma Road and the North-Western Road. Much has been written lately about the former, but less about the latter, facts about which are difficult to obtain. Like the Burma Road it has a railway being built parallel to it from Chungking, though road and rail follow different routes as far as Tienshui, the road running *via* Sian and the railway *via* Chengtu. West of Tienshui the railway is likely to follow the road more closely through Lanchow, capital of Kansu, and Hami and across Sinkiang to join the Russian Turk-Sib Railway at Taldy Kurgan or some other convenient station about 100 miles over the frontier separating Sinkiang from U.S.S.R. territory. From 1938 onwards munitions were brought from the U.S.S.R. into Chungking over this road, at first in Russian lorries and later in Chinese. Thousands of mule carts, camels, and pack mules also brought down petrol and other less bulky supplies, and returned northwestwards loaded with wool, fur, skins, and tea in accordance with Sino-Soviet barter agreements. This traffic reached its maximum late in 1939, but, due to the Russo-German agreement then signed, it began to decline. To compensate for this diminishing oil supply, the Chinese rapidly developed their own oil wells in northern Kansu near the Sinkiang border, and this oil also used the road and supplied the transport over it. More recently, Soviet leanings to British and American policy caused a great revival of trans-frontier traffic by this route until Germany attacked Russia. Subsequently the position has been obscure, but the route is bound to remain an important international link, some 2,400 miles in length or 2½ times that of the Chungking—Burma Road to Lashio.

### Improving Traffic on the Burma Road

The latest report on traffic conditions on the Burma Road shows that, thanks to tireless watchfulness and immediate action by the thousands of men and women employed in the repair gangs, the road has not only been kept open during the monsoon, but recorded its heaviest traffic of the year during August. Despite Japanese air raids, some 4,000 lorries are stated to have passed up it from Lashio, carrying supplies for China, estimated at over 10,000 tons, during that month.

Now, however, Major Reynolds Condon, of the United States Army, has arrived and is working out a complete system of traffic control from Lashio to Kunming, and, in addition, some 50 other Americans are expected in Kunming almost immediately to superintend the servicing of the lorries. Once their labours begin to bear fruit, and with improvement in the weather this month, a further great improvement in the volume of traffic that can be handled should be established.

### The Burma Government and the Extension from Lashio

In connection with the construction of the railway from Lashio to the China frontier beyond Kunlong, it should be remembered that the Chinese had been pressing the Government of Burma for some considerable time to construct or to permit the building by themselves of this extension. The Government of Burma had, however, been unable to foresee an adequate return upon the capital outlay required for such a line, and it also foresaw difficulties in the way of letting others build this railway. Even when the British Government decided to finance the project, and consulted the Burma Government, the latter laid down four conditions on which its consent to the construction depended. These conditions are:—

(1) That no financial liability shall fall on the revenues of Burma, the Railway Fund, or the Federal Fund.

(2) That Burma shall be given an option to purchase the railway.

(3) That the necessary Customs, passports, and immigration control shall be imposed, and

(4) That normal measures for securing safety on railways shall be applicable to the new line.

The British Government accepts full financial liability for both the construction and working of the extension, according to a press communiqué issued by the Government of Burma.

### U.S.A. Army Transport by Rail

Movement of a constantly increasing passenger traffic load resulted in rail transport by the Army of more than 1½ million officers and men during the 12-month period ending July 1, according to an official announcement by the U.S.A. War Department. The office of the Quartermaster General, reporting routing and equipment for the 1940-41 fiscal year says that 1,534,981 men were routed on 4,266 special trains during the year without change in schedules or the cancellation of any services provided for civilian accommodation. Handling the 1940-41 volume of military rail traffic required the movement of 25,197 sleeping cars, 14,629 carriages, 4,408 luggage cars, 3,110 additional luggage vans used as kitchens, 518 box cars, 533 stock cars, 1,068 flat and gondola cars, and 5 diners. "The ease with which the troop movement was accomplished under demands of the National Emergency reflected the full co-ordination between the War Department and the railways of America," declared the Quartermaster General. The movement of troops by rail during the year represents a large increase over the 17,513 officers and men transported by rail in 1937, or the 7,887 transported in 1938. The only other recent large-scale emergency since World War days in which the U.S.A. Quartermaster Corps has been required to test its ability to handle speedily a large traffic volume was the movement of the Civilian Conservation Corps beginning in 1933. From May, 1933, to June 30, 1940, the routing and assembly of equipment were arranged for 876,306 officers, enlisted men, and members of the Civilian Conservation Corps.

### U.S.A. Social Services for the Forces

Six great national organisations in the U.S.A. have combined to form a United Service Organisation to provide soldiers with recreational, religious, and educational facilities.

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The constituents are the Young Men's Christian Associations, the National Catholic Community Service, the Salvation Army, the Young Women's Christian Association, the National Catholic Board, and the National Travellers' Aid Association. The U.S.A. Government is building upwards of 360 Service clubs in 125 defence areas, and the United Service Organisation will equip and operate them. For this purpose it is seeking $10,765,000, and various areas throughout the U.S.A. have received quotas which citizens will be urged to reach.

It may be recalled that on November 1, 1939, the British War Office announced that it had formed the Council of Voluntary War Work, in conjunction with recognised religious and philanthropic bodies, in order to co-ordinate activities and avoid overlapping of effort. Brief details were given at page 619 of our November 10, 1939, issue, and we have recorded from time to time the provision by the constituents of this council of canteens, buffets, and other facilities for travelling Servicemen.

### U.S.A. Hospital Cars

The U.S.A. War Department has recently authorised the use, as hospital ward cars with Army hospital trains, of four converted Pullman cars. Contracts for the work, which is estimated to cost $22,556 each, are to be placed.

### Troop Movement and Civilian Travel in U.S.A.

The Association of American Railroads has recommended to its member railways the elimination of duplicate passenger services, and the discontinuance of all unnecessary trains as a means of conserving equipment to handle record troop movements and civilian travel. In a letter from Mr. J. J. Pelley, President of the A.A.R., the railways have been asked to take steps to discontinue all unnecessary passenger trains ; to eliminate duplicate competitive services in excess of public needs ; eliminate unnecessary light passenger trains and duplicate schedules ; and apply promptly to state commissions for permission to abandon services shown by analysis to be unnecessary. The A.A.R. is to follow up these recommendations with specific proposals to some of the major railway systems on which duplicate competitive services can be eliminated or arrangements made to stagger trains.

Mr. Pelley's action followed on a warning from Mr. Ralph Budd, Transportation Member of the National Defence Advisory Commission, to the effect that the carriers would have to take action such as this if they were to cope successfully with prospective passenger traffic. Mr. Budd added that practically all railway passenger coaches were needed to handle the current service, and that in 1942 troop movements were expected to be from 40 to 100 per cent. greater than during the current year. He also pointed out that no priorities had been issued covering material for building additional passenger coaches and that the building of freight equipment would have to come first in the railway equipment programme.

### Berlin Tram Services Withdrawn

It is reported that services on 21 Berlin tram routes have been withdrawn due to labour shortage and the need for economy in the consumption of electricity.

### Large Trams in Rome

A press report from Rome states that articulated trams with the total length of 66 ft. are now in service, carrying 170 passengers. Large trolleybuses are also stated to be at work with provision for 150 passengers each.

### Increased Use of Trolleybuses in Switzerland

Due to petrol shortage, the use of trolleybuses in Switzerland is increasing. Experience during recent years has shown that this type of vehicle is eminently suited to regular routes with steep gradients and a moderate volume of traffic. A shortage of raw materials for the construction of new trolleybuses and for the erection of additional trolley wires is, however, proving a serious obstacle to any expansion of the trolleybus systems. At present trolleybuses are working in Zurich, Berne, Lausanne, Winterthur, Biel, and Neuchatel. A brief survey of trolleybus development in Europe was published at page 550 of our May 16, 1941, issue.

### Substitute Materials in German-Occupied Countries

Exhibitions on occupied territories, organised by the German authorities, to promote the use of substitute materials, are including a newly-built railway carriage, in the construction of which no copper, bronze, or tin has been used, the chief substitute being aluminium. Seats and curtain tapestries are made of artificial woollen and cotton yarns, floor coverings of paper material—shortage of cork and linseed oil banned the use of linoleum, and rubber has been replaced by artificial resin, extensively applied in electric fittings. It is claimed that these *ersatz* materials have resulted in a considerable saving in the deadweight of the vehicle.

### Developments in Jugoslavia

The bridge across the Save, south of Brod, on the Brod—Serajevo 2 ft. 6 in. gauge line, which was demolished during the recent fighting, was reopened during the first week in September.

The Serbian State Railways have contracted a loan of 50,000,000 dinar (£300,000) with the State Bank for the immediate carrying out of construction work and equipment; the principal items scheduled are the conversion of the Kraljevo—Cacak section to standard gauge, the further extension of that section towards the frontier, the re-equipment of the workshops at Kraljevo, Nish, Smederevo, and Petrovgrad, the rebuilding of railway workers' dwellings, and the construction of rolling stock.

### Christmas Traffic in Germany

The *Kölnische Zeitung* of September 15, announced that, in order to alleviate the burden placed on the German State Railway by Christmas traffic, quantities of circulars which are either bulky or heavy, and calendars, will not be accepted by the German Post Office. Between December 27 and January 23 (the new year traffic), no circulars in quantities exceeding 500 will be accepted.

### Local Train Services through Dublin

Beginning on Monday last, October 27, certain local trains of the Great Northern Railway from Drogheda, Malahide, and Howth began to run through to and return from Westland Row, Dalkey, and Greystones on the Great Southern Railways. Until now through running between the two railways in the neighbourhood of Dublin has been confined to long-distance trains of the G.N.R. working to and from Dun Laoghaire in connection with the Irish Channel mail steamers.

### Buses Taken by the Army

Considerable prominence has been given in the daily press to the statement made by Major F. S. Eastwood, North-Eastern Regional Transport Commissioner, who told a meeting of the Leeds Chambers of Commerce & Trade that 6,000 British buses had been taken over by the Army, and that replacements up to the end of the present year would be only 300. Actually a very large proportion of this total of 6,000 comprises pleasure motor-coaches, engaged in peacetime on activities which now have been suspended. The demands of the Army have not seriously affected the regular services of the motorbus systems of the country.

### Bus Company's National Savings Scheme

The Midland " Red " Motor Services (Birmingham & Midland Motor Omnibus Co. Ltd.) has in operation a highly successful National Savings scheme; the total number of National Savings Certificates purchased by employees to September 30 is 36,900, of a total value of £27,675; the number of contributors is 3,906. The intention of the organisers is that as near as possible to 50,000 certificates should be purchased by the end of the year. Mr. J. P. Savage, to whom we are indebted for these figures, is Secretary of the Bearwood (Traffic) Office Staff Group which has applied for 3,000 certificates, valued at £2,250. Outstanding among the groups, many of which have applied for more than 1,000 certificates, is Digbeth with a total of 6,754 certificates. In THE RAILWAY GAZETTE of October 3, at page 338, we recorded another aspect of the Midland " Red " Motor Services saving for the war effort. The employees of the company collected £1,373 between March 14 and August 31 for the Red Cross & St. John War Fund, and it is expected that £2,000 will be raised.

### Scilly Isle Air Line

The air service between St. Mary's (Isle of Scilly) and Penzance was resumed on Monday last, October 27. Two services in each direction daily, except Sundays, are being operated by Great Western & Southern Air Lines Limited.

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# Parliamentary Notes

## Railway Agreement

Mr. F. W. Pethick-Lawrence (Edinburgh East—Lab.), on the motion for the Adjournment of the House of Commons on October 22, raised the question of the railways agreement, and said that the proper use of transport and our railway system in particular was a question of major importance in the prosecution of the war. We had in this country a fine network of railways and some of the best roads in the world, but our internal waterways had been driven out of use many years ago, and air transport had not been developed on a very extensive scale. Therefore, it was essential that road and rail should be so organised that we might extract from them the maximum of carrying power.

They were now being asked to substitute the policy of the White Paper for the crazy settlement of some 18 months ago. He would say, in its favour, that it was better than the old scheme. Gone was the absurd right of the railway companies to put up fares and rates after examining only one side of their accounts. On the purely financial issue, the bottom floor had been put up to £43,000,000. That was an increase of about £3,500,000 and for the period for which the agreement ran—that was during the period of the war and for a year after—that profit was guaranteed. It was well above the average of the previous earnings of the railway companies. This was not a precarious but a guaranteed amount, and, for that reason, it might have been expected that it would have been fixed at a lower rather than a higher figure in relation to the average earnings of pre-war days. Supposing the Government had adopted a different procedure and had taken over the railways and bought them out. The fixed dividend paid on what would then be Government stock would, naturally, be at a lower rate than a precariously earned profit. It seemed to him that the Government had tried to find a halfway house between private ownership and State ownership, and in the result had got the worst of both worlds. It was true that the State might have the ultimate say on major policy, but it obviously could not and did not possess control of day-to-day administration. Therefore, they had a divorce between administrative control and financial liability. The former agreement had, at any rate, to its credit, that it did give an incentive to efficient administration and economic working. Under the present agreement it would be no one's business to insist upon that. He was inclined to think that those who had direct administrative control of the railways would be encouraged in extravagance, if it was found that that would work out to the advantage of the companies in the years when they regained full control.

## Main Features

Colonel J. J. Llewellin (Joint Parliamentary Secretary to the Ministry of War Transport), said the main things about the old arrangement between the Government and the railways were that there had been a minimum guaranteed to the railways of £39,440,000. After that the first £3,500,000 of any addition to the pool was to go to the railways, bringing the sum up to the £43,000,000 which they had in the White Paper. After that there was to be a fifty-fifty sharing arrangement until the standard revenues of the railway companies were reached. Under the procedure laid down by the House in the Railways Act the standard revenues of the four main-line railway companies were fixed at £51,359,095. To that had to be added the standard revenue of the London Passenger Transport Board which amounted to £5,493,881, so the standard revenues added together gave them £56,852,976. Those were the revenues to which the Railway Rates Tribunal was to give effect when altering rates and charges. The maintenance charges which the House discussed last time were a good part of the old agreement which the Government had maintained in the present one. Then there was the provision that rates, fares, and charges were to be adjusted to meet variations in working costs. It should be noted that it was only variations in working costs and not variations in all general expenses. Then there was the provision that the cost of restoring war damage up to a maximum of £10,000,000 in any year was to be charged to revenue expenditure, and that again was to be taken into account in fixing fares and freight charges. The final provision to which he would refer was that if a major cause arose, either party to the agreement might propose a revision of it. In consequence of two Government decisions which had been approved by the House the railway companies agreed that a major cause had arisen and that a revision of the former arrangement was necessary. These decisions were that the Government would introduce legislation to place all public utility undertakings on the same basis as to war damage, that was to say, the railways would bear 50 per cent. of the cost of restoring war damage; and the other decision, announced by the Chancellor of the Exchequer in his Budget speech, was to minimise the impact of the increasing cost of transport on price levels.

## Public Policy

The new agreement operated as from January 1 this year. It represented a carefully considered public policy, and it had the endorsement of the War Cabinet as a whole. The five main differences were: The fixed annual payment of £43,000,000 was, as it were, a rent for the undertakings. When it was taken out of the pool the Government would take any surplus or make good any deficiency. The cost of restoring war damage was no longer to be charged to working expenses. In other words, the railways could not charge their 50 per cent. share to the pool, but must find it in future from their own resources. The arrangement as to adjustment of fares, rates, and charges was to cease, which would be a great benefit to the travelling public and the trader. The Government would adhere to its stabilisation policy unless it was forced off it by such an increase in, for instance, wages, as would make its abandonment inevitable. The fifth point of difference was that control was to be continued for at least a year after the war ended; indeed, until such time as the statutory machinery for the fixation of the level of charges could again become effective.

The House and the country would want to know whether a good bargain had been made for the taxpayer, and whether, in doing so, the Government had acted fairly by the vast number of people who owned railway shares. During the first complete year of control, 1940, the pool net revenue for the main line railways and the London Passenger Transport Board came to £42,300,000. This year it would probably come to more. In that case the major proportion of the increase would go to the taxpayer as the figure last year was not far short of the £43,000,000. Apart from that the cost of operation of the railways had increased and under the old arrangements the railways were entitled to ask and, indeed, did ask, for leave to raise fares and freights. That lag dated back to 1940 and would have eventually increased the net revenues of this and future years, had the Government not taken the decision to stabilise as far as possible fares and freight charges, and a further substantial sum would have been carried to the pool. In the last war the rent paid for the railways—a smaller undertaking, as it did not include the tubes, London buses and trams—was an average of £46,800,000 a year. Also the Government had had to pay out £60,000,000 at the end of the war for arrears of maintenance and other charges.

## No Profiteering

They could not say that the railways in getting the terms that they had, were in any way acting as war profiteers. They had made it clear that they had set aside ordinary commercial considerations because in their view the national interest had to be paramount at this time. That was why the Government had been able to get a good agreement from its point of view. The railway boards did not accept the £43,000,000 as in any way representing the existing or potential earning capacity of their undertakings. He thought that from the taxpayers' point of view they could congratulate themselves that they had made a good bargain. The railway shareholders had got a stabilised revenue for the period of the war, and for one year after, subject only to the qualification that the railway companies would ultimately have to pay 50 per cent. of the war damage, whereas previously they had to pay 100 per cent. of any war damage over £10,000,000 in a year, the £10,000,000 coming out of the pool and being taken out of increases in freights and charges. How the new scheme of war damage would affect dividends would depend on how the railway boards decided to find the money for their contributions, but it would be evident that unless the damage in any year exceeded £20,000,000 the railways would have to find a larger sum under the new agreement than they would have had to under the old. He thought that in the agreement they had done fairly by the shareholders. He did not see any reason for putting the rent they were giving the railways lower than the figure of the average years just because it was guaranteed for a while.

Mr. A. G. Walkden (Bristol South—Lab.) pointed out that the standard revenue had never been earned. It was fixed at a time when the railways were employing 750,000 men and to-day they were employing only 550,000, and therefore that figure for the standard revenue was out of the question.

Colonel Llewellin agreed that the figure had never been earned, but he added, "if you have never quite achieved an end which was aimed at for years and the situation of the day gives you some chance of achieving it, then it must once again begin to bulk more largely in the minds of the shareholders." Whether it had been reached or not, it was the sum which was laid down by the Railway Rates Tribunal after taking into account all the factors specified in the Railways Act, 1921.

Dealing with points concerning general control, the Parliamentary Secretary said the only way in which the agreement could be related to the control of the railways was that it had this indirect advantage, that when they were discussing the withdrawal of perhaps the more remunerative railway services in order to get essential troop or goods traffic through they had no longer to consider the effect upon the revenues of the railway companies. That was the only way in which this changed agreement altered the position from the

operational side. The Ministry of War Transport was the co-ordinating authority for coastwise shipping, railways, roads, and canals, and he believed that the work was being done with efficiency and success. The Government had all the control of railways that it wanted. It was a day-to-day control, through the Railway Executive Committee. That body was presided over by Sir Ralph Wedgwood, who had now retired, and he would like to take the opportunity of thanking him for the hard work he put in as chairman. Sir Alan Anderson, the present chairman of the Railway Executive Committee, was also Controller of Railways. He held a meeting once a week. The rest of the time he was in constant touch and co-ordinating the efforts of the railways at the headquarters of the Railway Executive Committee. There was complete unification by all the general managers working together.

Mr. A. G. Walkden (Bristol South—Lab.) said that the Parliamentary Secretary's explanation of the whole position left the matter in a most unsatisfactory state, which would cause further concern in the minds of the hundreds of thousands of workers who were interested in the great public service of railway transport and its sister service of road transport. The Agreement was less bad than the other one. Even now it was not finally settled ; the lawyers were haggling about it. This great service needed unifying at once, and completely. The canals were still not giving the service they might, because we had not an all-in central authority to control these things. Some people with very little experience and rather timid minds said that transport could not be unified completely because no man living could control and direct all these aspects of transport single handed.

### Rating Point Raised

Sir Joseph Lamb (Stone—C.) said that the County Councils' Association felt considerable uncertainty as to the effects that the White Paper would have upon its members as rating authorities. It had grave fears that the White Paper would alter the basis of the valuation laid down in the Acts of 1930 and 1933.

Mr. G. Ridley (Clay Cross—Lab.) said the weakness of the White Paper as a financial arrangement was that it guaranteed a profit of £43,000,000 to the existing owners while leaving the direction of the industry with the existing owners.

Colonel Sir George Courthope (Rye—C.) said that in the case of not less than £80,000,000 of railway stock, the holders would receive no dividend during the currency of the agreement. Not unnaturally, a great many railway stockholders felt that it was very unfair to them.

Mr. Moelwyn Hughes (Carmarthen—Lab.) said that in the previous agreement there had been a provision for standardising maintenance charges, and he asked whether they had been standardised. If they had been standardised what was the figure and why had the House not been told it now ? Even within the policy of stabilisation it might be necessary to make alterations in some of the rates and fares without affecting the general level. In that case he asked what procedure it was proposed to adopt.

Major Maxwell Fyfe (West Derby—C.) said that the agreement was one that the House should approve. He asked the Parliamentary Secretary a number of questions dealing with the local rating position, which he said had given great concern to the Association of Municipal Corporations.

Colonel Llewellin replying to the discussion said the Ministry of War Transport was an all-in central transport authority. To co-ordinate and control transport was the function it had to perform, and it was doing its best. As to rating, the first thing to remember about the agreement was that it could not affect the rates until 1946, and he did not think they need trouble themselves very greatly now about the effect of the agreement in 1946. The matter was not really one for the Ministry of War Transport, but for the Ministry of Health. The Government would alter fares here and there and adjust them, without going to any kind of consultative tribunal. If rates generally had to go up the Ministry might agree to it as a Ministry, or it might take the matter before the Railway Rates Tribunal. All large contracts for work or supplies on maintenance account during control were to be subject to the prior consent of the Minister. He was strengthening the transport accounts branch of the Ministry, which since the last war had had a nucleus of ex-railway accountants, and it would examine the control accounts jointly with railway accountants. Capital charges would not be allowed to come into the ordinary expenditure as a revenue charge. As to the Excess Profits Tax, Section 27 of the Finance Act, 1940, provided that a substituted standard might be allowed by the commissioners if it could be shown that the profits for the standard period were depressed. The substituted period was to be such as the commissioners or referees thought just, not exceeding an amount sufficient to pay 6 per cent. on the ordinary share capital. The £43,000,000 would not pay anthing like 6 per cent. on the ordinary share capital of the railway companies.

## Questions in Parliament

*Below are summarised Answers to Questions in Parliament affecting transport. The Minister concerned and the date of the Answer are given in parentheses.*

### Railway Construction in Burma

The heavy rains which last from June to October render the area through which the Burmese section of the railway will run too unhealthy for the maintenance of any considerable labour force. Extensive field work was therefore not possible until the beginning of October, but a commencement was made and it was expected that full outdoor staff consisting of five survey parties would be complete by the end of September and ready to take the field as soon as the rains ceased. (Mr. L. M. S. Amery, Secretary of State for Burma, October 16.)

[The answer refers to the work in connection with the carrying of the railway line to the Burma frontier there to join up with the railway which the Chinese are constructing to Yunnan.]

### Fire Prevention Transport Officers

Seventeen regional fire prevention transport officers have been appointed to operate the Fire Prevention (Business Premises) Scheme. They have been appointed largely because of their railway experience. One in London is paid £600 a year, the rest are paid £500 a year. All were at one time, or are, officers of the railways. The pension payable to the retired officers is a matter between them and the superannuation funds concerned, and I have not thought it necessary to inquire into the amounts. (Colonel J. J. Llewellin, Joint Parliamentary Secretary, Ministry of War Transport, October 22.)

## S.R. Locomotive Named "Royal Mail"

Lord Essendon, Chairman of Royal Mail Lines, performed the ceremony of naming the third of the Southern Railway's new "Merchant Navy" class of locomotives *Royal Mail*. The ceremony, illustrated at page 450, took place at Waterloo station on October 24, and afterwards a number of guests were entertained in the train, which, made a circular tour *via* Staines, Sunningdale, and Weybridge. Lord Essendon travelled on the footplate from Waterloo to Richmond.

Lord Essendon was welcomed by Mr. R. Holland Martin, Chairman of the Southern Railway Company, who said that there were many advocates of standardisation who urged that there should be one standard of efficiency for a locomotive so that the engine should be able to draw any steam train, whether passenger or goods, on all the British railways. They forgot, however, that the nature of the traffic and the gradients differed on all the main lines, so that there was in the world of transport just as much need for differences as there was for the thoroughbred and the cart horse. This was why in order to cater for the Southern Railway's peculiar requirements, the Chief Mechanical Engineer, Mr. O. V. Bulleid, had designed the "Merchant Navy" class of mixed traffic locomotive. Standardisation tended to hamper invention, and without invention there could be no improvement. Lord Essendon had been asked to name the third engine *Royal Mail*. It was a hundred years ago, in December, 1841, that the steamship *Forth*, of under 2,000 tons, left Southampton on her maiden voyage to the West Indies for the Royal Mail Company. Since then the Royal Mail Line had grown and prospered, until magnificent craft like the *Alcantara* and others of 22,000 tons left the port.

Lord Essendon, in the course of his reply, expressed his appreciation of the reference to the *North* and the long association of the Royal Mail with the Southern Railway, adding that from about the year 1859 to 1873 the chairman of the Southern Railway, or rather of the old London & South Western Railway, was also chairman of the Royal Mail Company, so that the association between the two companies was long and outstanding.

Representatives of the Southern Railway Company present at the ceremony included Mr. R. Holland-Martin (Chairman), Colonel Eric Gore-Browne (Deputy-Chairman), Sir Herbert A. Walker (Director), Sir Francis H. Dent (Director), Messrs. E. J. Missenden (General Manager), J. Elliot (Deputy General Manager), G. Ellson (Chief Engineer), A. Raworth (Chief Electrical Engineer), H. L. Smedley (Solicitor), H. A. Short (Acting Docks Manager), O. V. Bulleid (Chief Mechanical Engineer), A. Cobb (Locomotive Running Superintendent), C. Grasemann (Public Relations & Advertising Officer), W. J. England (Assistant Supt. of Operation), C. A. G. Linton (Assistant Engineer, General Maintenance), J. E. Sharpe (London West Divisional Superintendent), E. S. Moore (Divisional Locomotive Superintendent), E. A. W. Turbett (Mechanical Engineer, Eastleigh), J. Harrington (General Assistant to General Manager), W. J. Shorter (Assistant to Public Relations Officer), A. J. Elmes (General Manager's Office), Foreman A. Biggs, Shopman A. Caspar, Shopman H. J. Ryan, Shopman T. Coles, Shopman W. Barden, Shopman G. Blake, Shopman F. Cock (all of Eastleigh Works.

Others present included Mr. H. W. W. Fisher (Ministry of War Transport), Mr. E. Marsden (Railway Executive Committee), Mr. W. C. Warwick (Houlder, Bros. & Co. Ltd.), Mr. J. A. Kay (Editor, THE RAILWAY GAZETTE.)

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# Notes and News

**Agreed Charges.**—Notice is given that 71 applications for the approval of agreed charges under the provisions of Section 37 of the Road & Rail Traffic Act have been lodged with the Railway Rates Tribunal. Notices of objection must be filed on or before November 11.

**Argentine Crop Movements.**—It is reported that the continued improvement in Argentine railway traffic receipts is due very largely to the movement of crops from up-country stations to the ports. The port storage installations are stated to be rapidly filling and the view is held that the crop movement may shortly cease, with an adverse effect on the weekly traffic return.

**Essential Work Order for Railways.**—As from October 27, the principal railway undertakings become subject to the Essential Work Order. The Minister of Labour & National Service in making the order has modified the customary disciplinary provisions of the Order so that there shall be no interference with the existing agreed arrangements for the staffs of railway companies.

**Great Southern Railways (Eire).**—For the 41st week of 1941 the Great Southern Railways Company reports passenger receipts of £37,513 (against £31,112), and goods receipts of £67,186 (against £61,436), making a total of £104,699, against £92,548 for the corresponding period of the previous year. The aggregate receipts to date are passenger £1,652,772 (against £1,474,107, goods £2,135,258 (against £1,919,774), making a total of £3,788,030 (against £3,393,881).

**Economy in Transport.**—Lord Leathers, Minister of War Transport, announced on October 27 that the Government had decided that in view of the growing demands of the war effort on all forms of transport at home, action would have to be taken to free transport from all unnecessary movements. All avoidable cross-hauls would be eliminated, and the haulage of goods over long distances curtailed wherever alternative goods could be obtained from nearer sources of supply.

**The Institution of Mechanical Engineers.**—As announced by Mr. W. A. Stanier before delivering his Presidential Address at the meeting of the Institution of Mechanical Engineers on October 24, the Secretary of the Institution, Mr. J. E. Montgomrey, B.Sc.(Eng.), who will by then have reached the age limit, will retire in March next. His successor will be Dr. H. L. Guy, Chief Engineer (Mechanical Division) of Vickers Limited. The President also announced the retirement from the Council of the Institution of Mr. R. E. L. Maunsell, formerly Chief Mechanical Engineer of the Southern Railway.

**Ministry of Fuel Suggested.**—Sir David Milne-Watson, Governor of the Gas Light & Coke Company, in his presidential address to the Fuel Luncheon Club on October 22 urged the formation of a Ministry of Fuel. He said it was essential that coal and its derivatives should be most carefully conserved by the most efficient and economical use. Production, distribution, and marketing of all forms of indigenous fuel should be placed in the hands of a unified control. He pointed out that since the transfer of responsibility for electricity matters from the Ministry of War Transport to the Board of Trade had been effected, the latter department covered, through its various sections, all branches of fuel. He thought, however, that in view of the multiplicity of tasks which fell to be dealt with by the President of the Board of Trade there were good grounds for proposing the establishment of a separate Ministry of Fuel.

**Road Accidents in September.**—The return issued by the Minister of War Transport of the number of persons reported to have died or to have been injured as a result of road accidents during the month of September shows 768 deaths (compared with 910 in September, 1940), 4,105 seriously injured, and 12,167 slightly injured. Comparative figures for persons injured are not available for a year ago.

**Canadian National Railways.**—Gross earnings during September last were $27,132,153, an increase of $6,012,933, and operating expenses were $20,739,081, an advance of $3,547,328, leaving net earnings $2,465,605 higher, at $6,393,072. Aggregate gross earnings for the nine months from January 1 are $220,312,011, an increase of $41,896,020, and the net earnings of $48,589,326 show an improvement of $20,621,010.

**B.A.P. and Argentine Great Western.**—The scheme of arrangement of the Buenos Ayres & Pacific and Argentine Great Western Railway Companies to continue a moratorium scheme until 1942 was sanctioned by Mr. Justice Simonds in the Chancery Division on October 20, after hearing objections by a stockholder. His Lordship said that the scheme was in effect nothing more than a continuation of a moratorium scheme which had been in existence for some years.

**Road Transport Bill (Northern Ireland).**—A Bill bearing this title has been read a first time in the Northern Ireland House of Commons and ordered to be printed. It was presented by the Minister of Home Affairs, and supported by the Minister of Home Affairs and Mr. Lowry. The purpose of the measure is to secure the observance of the requirements of Section 16 of the Road & Railway Transport Act (Northern Ireland), 1935, relating to the wages and conditions of employment of persons employed by local carriers.

**Nordisk Järnbanetidskrift.** — Our Scandinavian contemporary the *Nordisk Järnbanetidskrift* recently completed its 65th year of publication; it is the official organ of the Northern Railway Associations, whose headquarters are in Stockholm and which was founded in 1869. By 1874 it had embraced the railway managements of the four so-called Northern countries, Sweden, Norway, Denmark, and Finland. Congress meetings are regularly held in these countries to discuss technical, administrative, and operating questions, and arrive at standard methods suited to the circumstances prevailing in those parts of Europe. The *Tidskrift* is printed in Danish, Norwegian, and Swedish, and articles dealing with Finland appear in the last named language. In its earliest years it was known as the *Jernbanebladet*. The present war has of course created great difficulties for railway officers in three of the countries, and the issue of the journal had to be suspended for a time after Germany invaded Norway and Denmark, but has since been resumed. Its pages, in which all articles are signed, are a source of valuable and authoritative information on railway working in Scandinavia.

**Crossing the Panama Canal.**—It is reported that three bridges and a tunnel under the Panama Canal are to replace the existing motorcar ferries which at present accommodate 90,000 cars monthly. The tunnel will be under the Pacific end of the canal.

**Peruvian Corporation Limited.**—The Peruvian Corporation has decided to take the necessary steps to obtain the sanction of the High Court to a new scheme of arrangement extending (with modifications) the operation of the existing scheme for a maximum further period of five years from December 31, 1941, and the directions of the Court as to convening the necessary meeting of debenture holders to consider this new scheme have been obtained.

**Traffic Increases in Newfoundland.**—The increase in traffic on the Newfoundland Railway, to which we have referred on more than one occasion, has now resulted in passenger trains often being run in three sections. The present schedule provides for three trains weekly in each direction between Fort-aux-Basques to St. John's, but there is now a demand for a daily service, and apparently the only obstacle is lack of sufficient railway equipment.

**Egyptian Delta Light Railways Limited.**—Presiding at the annual general meeting on October 23, Sir Montagu Sharpe, K.C., the Chairman, said that a welcome improvement in traffic receipts had set in in the late autumn of 1940, and had continued without setback up to the present time. Funds were now available for the resumption of payments of debenture interest and accordingly all arrears of interest, and the coupon which fell due on October 1, 1941, had been duly paid. On the other hand, operating costs had risen still further.

**Leopoldina Railway Co. Ltd.**—Mr. C. H. Pearson, speaking at the annual general meeting of this company on October 23, said that in true comparison sterling net revenue had increased by £30,892. For the decrease of 1,311 contos in goods receipts, notwithstanding an increase of 80,772 tons carried, the coffee traffic was wholly responsible. The considerable drop in coffee exports and prices, due to the war and the extinction of practically all the markets in Europe had resulted in a decline in tonnage of 46,275 and in receipts of 6,377 contos. As to the immediate future, gross receipts to October 18 showed an increase of 14,593 contos and £143,493 sterling. The company had been able to pay off another half-year's interest on the 4 per cent. debenture stock, leaving the interest four years in arrear.

**Perth (W.A.) Tramways Motorbus Garage.**—The introduction in Perth (Western Australia) of six petrol buses to operate in conjunction with the existing trolleybuses, and the approval to the purchase of a further eight buses for the South Perth district, has necessitated the provision of additional garage accommodation, and to meet this need arrangements have been made to roof over an open space between the existing trolleybus garage and the tramway car barn at East Perth. The area thus enclosed measures 68 ft. 9 in. by 63 ft. 9 in., and the cost involved is approximately £1,200. The new garage includes an inspection pit for greasing and servicing of brakes, and engine undergear, and is fitted with the necessary lighting and an automatic sprinkler system for fire protection.

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# OFFICIAL NOTICES

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## Staff & Labour Matters

### Road Vehicle Repair Workers

Under an agreement between the Motor Agents' Association and the Amalgamated Engineering Union, National Union of Vehicle Builders, National Union of General & Municipal Workers and the Transport & General Workers' Union, the following minimum rates of pay operate as from October 2, 1941 :—

| | London An hour s. d. | Provinces An hour s. d. |
|---|---|---|
| Skilled ... ... ... | 1 9½ | 1 8½ |
| Semi-skilled ... ... | 1 7½ | 1 6½ |
| Other workers ... ... | 1 5½ | 1 4½ |

| Age | Percentage of skilled wages |
|---|---|
| Apprentices, boys, and youths— | |
| 16 ... ... ... ... ... | 30 |
| 17 ... ... ... ... ... | 35 |
| 18 ... ... ... ... ... | 47½ |
| 19 ... ... ... ... ... | 55 |
| 20 ... ... ... ... ... | 65 |

The designations of the workers to whom the agreement applies are as follow :—

(*a*) *Skilled Craftsmen*—Those who can undertake all major repairs to motor vehicles without supervision.
(*b*) *Semi-skilled*—Those who can undertake most repairs but under supervision.
(*c*) *Other Workers*—Those employed in repair shops not specified in categories (*a*) or (*b*).
(*d*) *Apprentices, boys, and youths*—Boys under 21 years of age.

## Railway and other Reports

**Nyasaland Railways Limited.**—Gross operating receipts for the year 1940 were £174,627 (£178,618), and working expenses £99,663 (£105,823), leaving £74,964 (£72,796). Operating ratio, including provision for renewals, is 57·07 per cent., against 59·24 per cent. in 1939. Interest, dividends, etc., received bring total net receipts to £111,263 (£125,003). For 1940 there is no dividend from the Central Africa Co. Ltd., which in 1939 paid £7,875. After reserving £26,031 for taxation and providing for interest charges there is a balance of £863 to be carried forward. Tonnage, excluding lake service was 73,945 (74,097), and passengers, excluding lake service, numbered 156,357 (146,046).

**Costa Rica Railway Co. Ltd.**—The report for the year to June 30, 1941, explains that by agreement with the United Fruit Company, the Costa Rica Company has assumed control of the whole railway system on the Atlantic side of Costa Rica. In effect, it has acquired, without cost, the whole share capital of the Northern Railway Company, the entire debt due from that company to the United Fruit Company, and sundry branch lines belonging to the Compañia Bananera de Costa Rica. In addition the United Fruit Company has agreed to pay to the Costa Rica Company damages for the breach of the working agreement by its subsidiary. The balance, after payment of legal and other expenses, namely £89,619, has been placed to capital reserve. Interest on investments, etc., amounted to £6,423. No remittances were received from the Northern Railway Company during the year, and the debit balance for that period is £77,561. The total deficiency, including debit balance brought forward, is £100,776.

**Compagnie Francaise des Chemins de fer de la Province de Santa Fé.**—The River Plate Trust, Loan & Agency Co. Ltd. notifies that it has now received the necessary funds to pay the half-yearly coupons due July 1, 1941, on the 3 per cent. mortgage obligations of the French Railways Company of the Province of Santa Fé. Coupons must be left at least three clear days for examination at the office of the agency, Northgate House, 20-24, Moorgate, E.C.2.

**Pinchin, Johnson & Co. Ltd.**—The interim dividend is 2½ per cent. (same).

**Peruvian Corporation Limited.**—A payment of 1 per cent. interest on account of Coupon No. 93 due October 1, 1936, will be made on November 24 next by Messrs. Coutts & Co. to holders of the first mortgage debentures.

**W. R. Sykes Interlocking Signal Co. Ltd.**—Profit to April 30 last, after depreciation, was £1,176 (£1,187); deduct war damage contribution £340 (nil), and £434 for 6 per cent. cumulative "A" preferential dividend for one year to October 31, leaving to be carried forward £4,112 (£3,710).

**R. & W. Hawthorn, Leslie & Co. Ltd.**—Accounts for the year to June 30 last show a net profit of £132,271, after providing for taxation, depreciation, and contingencies. Dividend for the year is again 10 per cent., less tax, and there is a bonus of 5 per cent., less tax (2½ per cent., tax free). A transfer of £50,000 (£85,000) is made to general reserve, leaving £52,826 (£51,167) to be carried forward.

## Contracts & Tenders

The U.S.A. Missouri-Pacific System since the beginning of the current year has placed orders for 5,422 freight wagons valued at some $16,000,000.

The National Railways of Mexico have placed an order for two 44-ton diesel electric locomotives with the U.S. General Electric Company.

The Pennsylvania Light & Power Company has taken delivery of a 95-ton fireless steam locomotive for service at its Hauto, Pennsylvania, plant from the H. K. Porter Company. This is reported to be the largest fireless steam locomotive which has been built.

The National Railways of Mexico are enquiring for 150 40-ton stock wagons, and 150 50-ton general service gondola wagons. These railways have also issued enquiries for the purchase of a total of 120 all-steel lightweight passenger coaches as follow: 16 70-ft. first class coaches, 64 70-ft. second class coaches, 20 express coaches, and 20 mail-baggage coaches. In THE RAILWAY GAZETTE of September 19 it was recorded that the National Railways of Mexico were enquiring for a total of 140 steam locomotives.

## British and Irish Railway Stocks and Shares

| Stocks | Highest 1940 | Lowest 1940 | Prices Oct. 24, 1941 | Prices Rise/Fall |
|---|---|---|---|---|
| **G.W.R.** | | | | |
| Cons. Ord. ... ... | 52 | 22½ | 40 | + ½ |
| 5% Con. Pref. ... | 103½ | 58 | 100½ | — |
| 5% Red. Pref. (1950) | 105½ | 88 | 103 | — |
| 4% Deb. ... ... | 107½ | 90½ | 111½ | + 1 |
| 4½% Deb. ... ... | 108½ | 96½ | 113 | + 1 |
| 4½% Deb. ... ... | 114½ | 96 | 117½ | + 1 |
| 5% Deb. ... ... | 124 | 106 | 130 | + 1 |
| 2½% Deb. ... ... | 66½ | 57 | 67 | + 1 |
| 5% Rt. Charge ... | 117½ | 97 | 126½ | + 2 |
| 5% Cons. Guar. ... | 117 | 90½ | 124½ | + 3 |
| **L.M.S.R.** | | | | |
| Ord. ... ... ... | 24½ | 9 | 15 | — ½ |
| 4% Pref. (1923) ... | 60½ | 21½ | 48½ | + 1 |
| 4% Pref. ... ... | 70½ | 35 | 61½ | — |
| 5% Red. Pref. (1955) | 94½ | 60 | 91½ | — |
| 4% Deb. ... ... | 101½ | 81 | 104½ | + 2 |
| 5% Red. Deb. (1952) | 109½ | 102 | 110½ | — |
| 4% Guar. ... ... | 93½ | 65 | 95½ | + 1 |
| **L.N.E.R.** | | | | |
| 5% Pref. Ord. ... | 8½ | 1½ | 2½ | — |
| Def. Ord. ... ... | 4½ | 1½ | 1½ | — |
| 4% First Pref. ... | 60 | 20 | 47½ | + 1 |
| 4% Second Pref. ... | 22½ | 6½ | 17 | — |
| 5% Red. Pref. (1955) | 80 | 34½ | 76½ | — |
| 4% First Guar. ... | 86½ | 56 | 86½ | + 1 |
| 4% Second Guar. ... | 77½ | 37 | 75½ | — |
| 3% Deb. ... ... | 73½ | 54½ | 77½ | + 1 |
| 4% Deb. ... ... | 97½ | 74 | 102½ | + 2 |
| 5% Red. Deb. (1947) | 107 | 96½ | 103½ | + ½ |
| 4½% Sinking Fund Red. Deb. | 104 | 98 | 101½ | — |
| **SOUTHERN** | | | | |
| Pref. Ord. ... ... | 79 | 34 | 61½ | + 1 |
| Def. Ord. ... ... | 22½ | 7 | 13½ | + ¼ |
| 5% Pref. ... ... | 104½ | 58½ | 99½ | + 1 |
| 5% Red. Pref. (1964) | 105 | 85 | 103½ | — |
| 5% Guar. Pref. ... | 116½ | 90 | 124½ | + 3 |
| 5% Red. Guar. Pref. (1957) | 114 7/16 | 94 | 111½ | — |
| 4% Deb. ... ... | 106½ | 84½ | 109½ | + 1 |
| 5% Deb. ... ... | 122½ | 100 | 126½ | — |
| 4% Red. Deb. (1962-67) | 106 | 96½ | 105 | — |
| 4% Red. Deb. (1970-80) | 106½ | 93 | 105 | — |
| **FORTH BRIDGE** | | | | |
| 4% Deb. ... ... | 95½ | 87 | 96½ | — |
| 4% Guar. ... ... | 93½ | 81½ | 97½ | + 1 |
| **L.P.T.B.** | | | | |
| 4½% "A" ... ... | 116 | 103 | 115½ | + 1 |
| 5% "A" ... ... | 121½ | 107 | 123½ | — |
| 4½% "T.F.A." ... | 105½ | 10[illegible] | 101½ | — |
| 5% "B" ... ... | 116 | 10[illegible] | 114½ | — |
| "C" ... ... ... | 65½ | 24 | 40 | — |
| **MERSEY** | | | | |
| Ord. ... ... ... | 26 | 18½ | 20½ | — |
| 4% Perp. Deb. ... | 92½ | 86½ | 95½ | — 1 |
| 3% Perp. Deb. ... | 68 | [illegible] | 70½ | — |
| 3% Perp. Pref. ... | 57 | 50½ | 56 | — |
| **IRELAND** | | | | |
| **BELFAST & C.D.** | | | | |
| Ord. ... ... ... | 4 | 3 | 4 | — |
| **G. NORTHERN** | | | | |
| Ord. ... ... ... | 4½ | 1½ | 12 | + 2½ |
| **G. SOUTHERN** | | | | |
| Ord. ... ... ... | 12½ | 4 | 9 | + 3 |
| Pref. ... ... ... | 15½ | 6 | 10½ | + 4 |
| Guar. .. ... ... | 36 | 15 | 33½ | + 4½ |
| Deb. .. ... ... | 55½ | 40 | 55 | 4½ |

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# Railway Stock Market

Stock Exchange markets have maintained a satisfactory undertone, sentiment having been assisted by the small amount of selling, although there was very little improvement in demand due to the widespread tendency to await war and international developments. Markets have been influenced favourably by President Roosevelt's speech, and by firmness of British Funds, aided by the reinvestment of proceeds arising from the requisitioning of Canadian loans and by the vesting order in respect of South African stocks. There is general confidence that over a period, yields on gilt-edged stocks are likely to show a further gradual reduction, and that there will be a corresponding adjustment in yields on other front rank investments. Home railway prior charges have again made higher prices in response to steady demand, it being generally realised that they still offer yields which compare favourably with those obtainable on other high-class investment securities. On the other hand, the junior stocks have been in reduced demand; but no appreciable selling was reported, and although best prices made in the past few days were not held, in some instances prices were slightly better on balance. The continued uncertainty as to the position as to war damage contributions has naturally affected sentiment, despite the general assumption that, unless future air raid damage is exceptionally heavy, dividend rates are likely to be maintained. Whereas the financial agreement with the Government may be said to have had the effect of emphasising the excellent investment merits of prior charges, the junior issues must still be placed in the speculative category, despite the large and vital contribution of the railways to the war effort. Nevertheless, on the basis of last year's dividends, the junior stocks show substantial yields, which may attract a good deal of attention when there is sustained improvement of business on the Stock Exchange.

Compared with a week ago, Great Western ordinary stock has moved back from 40 to 39. On the other hand, the preference stock moved up from par to 101½, and the 4 per cent. debentures further improved to 112¼, a gain of a point. The ordinary stock of the L.M.S.R. was fractionally lower at 14⅞, but in other directions small gains were recorded, this railway's guaranteed stock having further improved from 95 to 95½, and the debentures were a point better at 104½. Furthermore, although best prices recorded in the past few days were not maintained, L.M.S.R. senior preference was slightly better on balance at 62, as was the 1923 preference at 48½ compared with 48 a week ago. On balance, L.N.E.R. second preference eased from 17 to 16¾, but the first preference was fractionally better at 47½. At 87½ and 76 respectively, L.N.E.R. first and second guaranteed were a point better on the week. Gains were also shown in this railway's debentures; the 4 per cents were 102½, compared with 101½, and the 3 per cents 79, compared with 77½. Among Southern issues, the deferred at 13⅛ was little changed on balance, and the preferred improved from 61 to 62. Moreover, Southern 5 per cent. preference has moved up from 98½ to par, and at 110½ the 4 per cent. debentures gained over a point. Further rises were shown in London Transport prior issues, and the 4½ per cent. "A" was 116¾, as compared with 114½ a week ago; elsewhere, the "C" stock rose from 39 to 40. In other directions Metropolitan stock improved a point to 52.

There was very little business among foreign railway securities; in many instances it appeared doubtful if quotations were adequately tested. Argentine railway issues were lower on balance, sentiment having been affected by the large increase in the cost of fuel referred to in the B.A. Gt. Southern report. Central Uruguay debentures received some attention, but Leopoldina debentures were lower despite the expectation of better results referred to at the meeting. Canadian Pacific Railway securities have been active; market estimates of the dividend to be paid for the current year range up to $1 per share.

## Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

| | Railways | Miles open 1940-41 | Week Ending | Traffic for Week: Total this year | Traffic for Week: Inc. or Dec. compared with 1940 | No. of Weeks | Aggregate Traffics to Date: Totals: This Year | Aggregate Traffics to Date: Totals: Last Year | Aggregate Traffics to Date: Increase or Decrease | Shares or Stock | Prices: Highest 1940 | Prices: Lowest 1940 | Prices: Oct. 24 1941 | Yield % (See Note) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South & Central America | Antofagasta (Chili) & Bolivia | 834 | 12.10.41 | £ 29,150 | £ + 15,310 | 41 | £ 788,990 | £ 700,170 | £ + 88,820 | Ord. Stk. | 11½ | 3½ | 7½ | Nil |
| | Argentine North Eastern ... | 753 | 18.10.41 | ps. 200.500 | + ps.23,000 | 16 | ps. 3,232,600 | ps.2,795,900 | + ps.436,700 | ,, | 3¾ | 1 | 3 | Nil |
| | Bolivar ... ... ... ... | 174 | Sept., 1941 | 4.137 | + 347 | 39 | 34,854 | 35,970 | − 1,116 | 6 p.c. Deb. | 6½ | 5 | 6½ | Nil |
| | Brazil ... ... ... ... | — | — | — | — | — | — | — | — | Bonds | 8 | 5 | 6½ | Nil |
| | Buenos Ayres & Pacific ... | 2,801 | 11.10.41 | ps.1,205,000 | + ps.45,000 | 15 | ps.19,120,000 | ps. 16,809,000 | + ps.2,311,000 | Ord. Stk. | 4½ | 1 | 6 | Nil |
| | Buenos Ayres Great Southern | 5,082 | 11.10.41 | ps.2,202,000 | + ps.442,000 | 15 | ps.31,257,000 | ps.27,827,000 | + ps.3,430,000 | Ord. Stk. | 10⅜ | 3 | 8½ | Nil |
| | Buenos Ayres Western ... | 1,930 | 11.10.41 | ps. 900,000 | + ps.223,000 | 15 | ps.12,010,000 | ps 9,317.000 | + ps.2,693,000 | ,, | 8⅜ | 2 | 6 | Nil |
| | Central Argentine ... ... | 3,700 | 18.10.41 | ps. 2,129,700 | + ps.790,050 | 16 | ps.29,266,200 | ps. 22,361,850 | + ps.6,904,350 | ,, | 8½ | 2 | 6 | Nil |
| | Do. ... ... | — | — | — | — | — | — | — | — | Dfd. | 4 | ½ | 2 | Nil |
| | Cent. Uruguay of M. Video | 972 | 11.10.41 | 22,802 | + 4,976 | 15 | 325,591 | 269.066 | + 56,525 | Ord. Stk. | 3¾ | ¼ | 6 | Nil |
| | Costa Rica ... ... ... | 188 | Sept., 1941 | 21,437 | + 5,073 | 13 | 68,996 | 57,220 | + 11,776 | Stk. | 23½ | 14 | 13 | 15⅜ |
| | Dorada ... ... ... | 70 | Sept., 1941 | 12,000 | − 200 | 39 | 112,750 | 110,700 | + 2,050 | 1 Mt. Db. | 99 | 97½ | 97 | 6⅛ |
| | Entre Rios ... ... ... | 808 | 18.10.41 | ps.262,300 | + ps.34,400 | 16 | ps. 4,743,400 | ps. 3,810 800 | + ps.932,600 | Ord. Stk. | 4 | ½ | 4½ | Nil |
| | Great Western of Brazil ... | 1,016 | 18.10.41 | 14,500 | + 600 | 42 | 384,600 | 415,400 | − 30 800 | Ord. Sh. | 4/- | 1/- | ⅜ | Nil |
| | International of Cl. Amer. ... | 794 | Aug 1941 | $404.818 | + $49.964 | 35 | $3,889,669 | $4,079.630 | − $1 89,961 | — | — | — | — | — |
| | Interoceanic of Mexico ... | — | — | — | — | — | — | — | — | 1st Pref. | 9d. | 9d. | ½ | Nil |
| | La Guaira & Caracas... ... | 22¾ | Sept.,1941 | 6,180 | − 2,060 | 39 | 58,005 | 60,300 | − 2.295 | — | 6 | 4 | — | — |
| | Leopoldina ... ... ... | 1,918 | 4.10 41 | 31,730 | + 4,205 | 40 | 1,036,981 | 899,942 | + 137,039 | Ord. Stk. | 2⅞ | ¼ | 3½ | Nil |
| | Mexican ... ... ... | 483 | 14.10.41 | ps. 278,200 | + ps.50,700 | 15 | ps. 4,611,000 | ps. 4,042,500 | + ps.568,500 | ,, | 2/11½ | ⅜ | ⅜ | Nil |
| | Midland of Uruguay ... | 319 | Aug, 1941 | 12.516 | + 1,310 | 9 | 27,026 | 21,592 | + 5,434 | — | — | — | — | — |
| | Nitrate ... ... ... | 386 | 15.10.41 | 7,729 | + 2,130 | 41 | 115.030 | 140,686 | − 25,656 | Ord. Sh. | 2¾ | 1 | 3 | 4⅞ |
| | Paraguay Central ... ... | 274 | 18.10.41 | $3,239,000 | + $59,000 | 16 | $53 600,000 | $56 619,000 | − $3,019,000 | Pr. Lt. Stk. | 41 | 36 | 42½ | 7½ |
| | Peruvian Corporation ... | 1,059 | Sept.,941 | 77,057 | + 13,209 | 13 | 214,265 | 198,447 | + 15,818 | Pref. | 4 | 1 | 4 | Nil |
| | Salvador ... ... ... | 100 | July, 1941 | c64,079 | + c12,612 | 4 | c64,079 | c51,467 | + c12,612 | — | — | — | — | — |
| | San Paulo ... ... ... | 153½ | 12.10 41 | 35,125 | − 1,077 | 41 | 1,524,991 | 1,481,334 | + 43,657 | Ord. Stk. | 50 | 23 | 43½ | 4⅞ |
| | Taltal ... ... ... | 160 | Sept.,1941 | 7,225 | + 5,050 | 13 | 16,390 | 6,725 | + 9,665 | Ord. Sh. | 15/1¼ | ⅜ | ½ | Nil |
| | United of Havana ... ... | 1,346 | 18.10.41 | 21,880 | + 6,668 | 16 | 305,731 | 248,338 | + 57,393 | Ord. Stk. | ⅜ | ¼ | 2 | Nil |
| | Uruguay Northern ... ... | 73 | Aug. 1941 | 1,337 | + 358 | 9 | 2,693 | 1.926 | + 767 | — | — | — | — | — |
| Canada | Canadian National ... ... | 23,560 | 14 10.41 | 1,226,538 | + 254,830 | 41 | 46,539,462 | 37,655,133 | + 8.884,328 | — | — | — | — | — |
| | Canadian Northern ... | — | — | — | — | — | — | — | — | Perp. Dbs. | 86 | 68 | 92½ | 4⅞ |
| | Grand Trunk ... ... | — | — | — | — | — | — | — | — | 4 p.c. Gr. | 105¾ | 95½ | 101¼ | 3¾ |
| | Canadian Pacific ... ... | 17,153 | 14.10.41 | 970,200 | + 310,000 | 41 | 33,491 ,600 | 25,768,600 | + 7,723,000 | Ord. Stk. | 9 7/16 | 4⅜ | 11½ | Nil |
| India† | Assam Bengal... ... ... | 1,329 | — | — | — | — | — | — | — | Ord. Stk. | 99¾ | 71 | 100 | 3 |
| | Barsi Light ... ... ... | 202 | 31.7.41 | 14,782 | − 7,980 | 18 | 67,635 | 56,587 | + 11,048 | — | — | — | — | — |
| | Bengal & North Western ... | 2 093 | Sept.,1941 | 231,525 | − 4,522 | 26 | 1,530,171 | 1,514,900 | + 15,271 | Ord. Stk. | 283 | 234 | 307 | 5⅞ |
| | Bengal-Nagpur ... ... | 3,269 | 10.7 41 | 222,300 | + 27,943 | 14 | 2,552,246 | 2,417,662 | + 134,584 | ,, | 96 | 83½ | 100½ | 4 |
| | Bombay, Baroda & Cl. India | 2,986 | 10.10.41 | 288,975 | + 32,325 | 27 | 5,487,225 | 5,112,900 | + 374,325 | ,, | 108 | 99 | 107½ | 5⅝ |
| | Madras & Southern Mahratta | 2,939 | 31.7.41 | 200,250 | + 39,623 | 18 | 2,427,279 | 2,107,868 | + 319,411 | ,, | 104 | 97⅜ | 102½ | 7⅛ |
| | Rohilkund & Kumaon ... | 546 | Sept., 1941 | 41,025 | − 4,737 | 26 | 347.627 | 347.049 | + 578 | ,, | 284 | 238 | 300 | 5⅞ |
| | South Indian ... ... | 2,500 | 10.7.41 | 160,572 | + 36,257 | 14 | 1,424.269 | 1,268,823 | + 155,446 | ,, | 93¾ | 83 | 97½ | 4⅛ |
| Various | Beira ... ... ... ... | 204 | July, 1941 | 74,593 | — | 43 | 727,546 | — | — | — | — | — | — | — |
| | Egyptian Delta ... ... | 610 | 31.7.41 | 7,912 | + 2,864 | 18 | 82,025 | 56,624 | + 25,401 | Prf. Sh. | 7/10½ | ⅜ | 2 | Nil |
| | Manila ... ... ... | — | — | — | — | — | — | — | — | B. Deb. | 53 | 44½ | 64 | 5⅞ |
| | Midland of W. Australia ... | 277 | May, 1941 | 17,591 | + 3.683 | 48 | 167,924 | 145,304 | + 22.620 | Inc. Deb. | 88 | 80 | 89½ | 6⅛ |
| | Nigerian ... ... ... | 1,900 | 28 6.41 | 44,945 | − 12,185 | 13 | 697,96 | 499,238 | + 198,730 | — | — | — | — | — |
| | Rhodesia ... ... ... | 2,442 | July, 1941 | 464,690 | — | 43 | 4,682,30? | — | — | — | — | — | — | — |
| | South Africa ... ... ... | 13,291 | 13.9.41 | 796,868 | + 119.667 | 24 | 17,765,743 | 16,035,459 | + 1,730,284 | — | — | — | — | — |
| | Victoria ... ... ... | 4,774 | June, 1941 | 953,571 | + 156,386 | 52 | — | — | — | — | — | — | — | — |

Note. Yields are based on the approximate current prices and are within a fraction of ⅛ Argentine traffics are given in pesos
† Receipts are calculated @ 1s. 6d. to the rupee